American Aviation

The Air Industry's Pioneer Independent Magazine

Oct. 1, 1949

More on Low Fares

IN ITS DECISION to continue the air coach experiments for various scheduled airlines, we think the Civil Aeronautics Board was unusually realistic. On the one hand it seems alert to the necessity of making air transport available to a broader market, but on the other hand it seems to be fully cognizant of the necessity of maintaining a first class service for the country at large by retaining a general basic fare structure upon which a complete national scheduled air service is dependent.

by W. W. P.

The present trend is, of course, for a two-class service and if kept within reasonable bounds this can be a healthy move for both the government and the public.

An adequate balance between high-density traffic and frequent scheduled service for the remainder of the country must be maintained. If low fares can be offered to the high-density routes without detracting from the rest of the national network—without penalizing the smaller communities and without putting the burden on additional mail pay—the air transport industry will have made a further constructive and forward move in broadening its market.

It has become increasingly clear that the CAB does not have sufficient enforcement powers, or at least does not have the aggressive desire to use what powers it has, to stem the tide of the non-skeds. Not only are intra-state non-skeds quite beyond the scope of CAB enforcement, but in interstate service it is much too easy to evade the federal regulations.

Thus it would seem that if the non-skeds are to be kept under control, the scheduled airlines must fight fire with fire and go into direct competition with them on some sort of competitive price basis. We look to see at least one large transcontinental carrier launch a low-fare high-density-seat service before the year is out and the popularity and success of Northwest's transcontinental coach service along the northern part of the country have already become well known. If this fighting fire with fire can be done without help from the taxpayer in the form of high mail pay—and especially without injury to the basic air network which reaches hundreds of medium and small communities—then common sense would dictate an expansion of second-class service on high-density routes. If the cream is to be skimmed, it is better to have it skimmed by the scheduled carriers themselves.

General Manager of Air Cargo, Inc.

Emery F. Johnson, secretary of Air Cargo, Inc., has been elected general manager and is now responsible for active management of the organization, following the recent resignation of Fred M. Glass, president. Johnson has been active in air transportation for 20 years and has served as an officer of ACI since beginning of its operations. Prior to that he was associated with the Air Transport Association and United Air Lines. (See story page 27).

In This Issue

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AIR RESCUE

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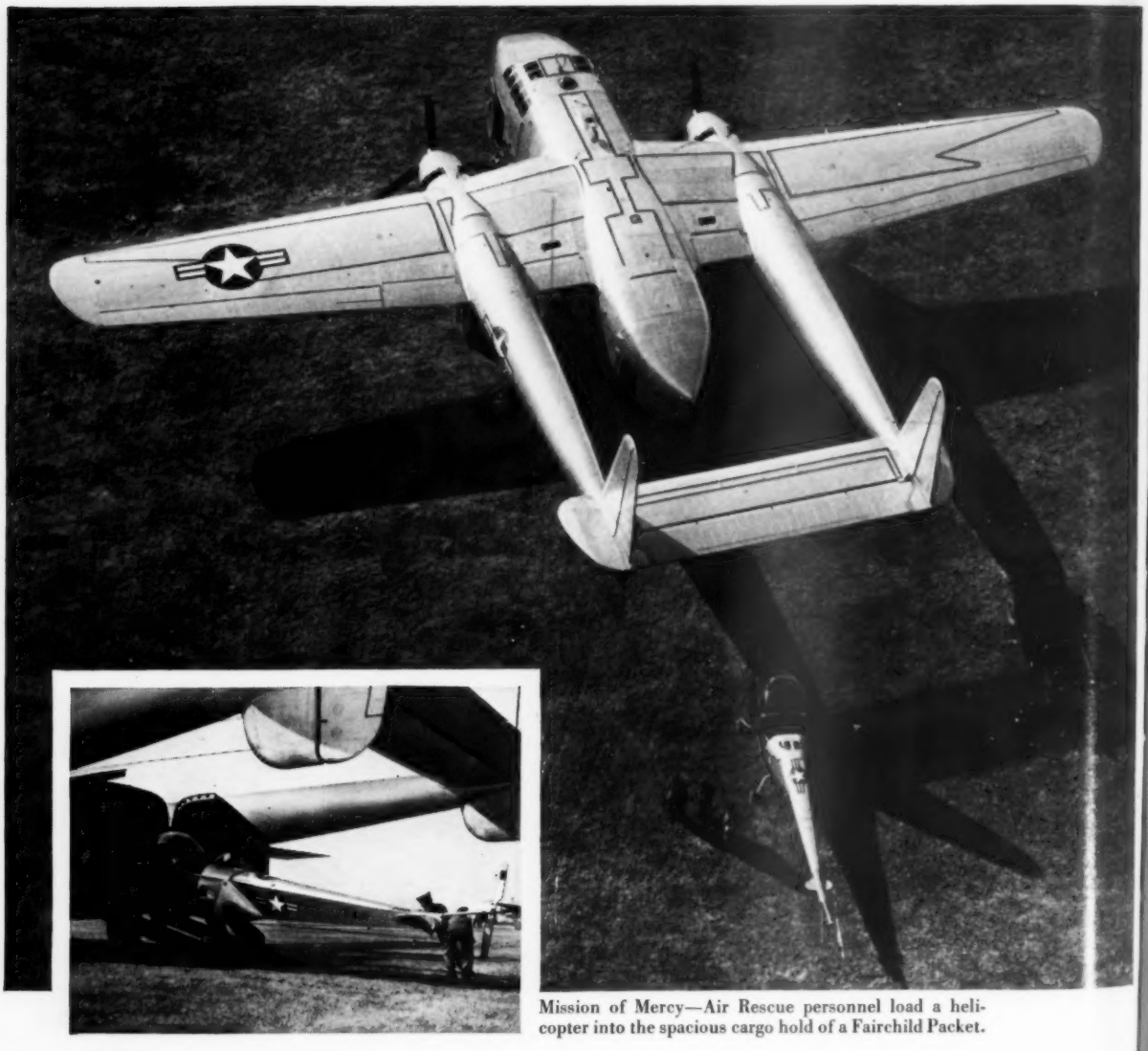

Mission of Mercy—Air Rescue personnel load a helicopter into the spacious cargo hold of a Fairchild Packet.

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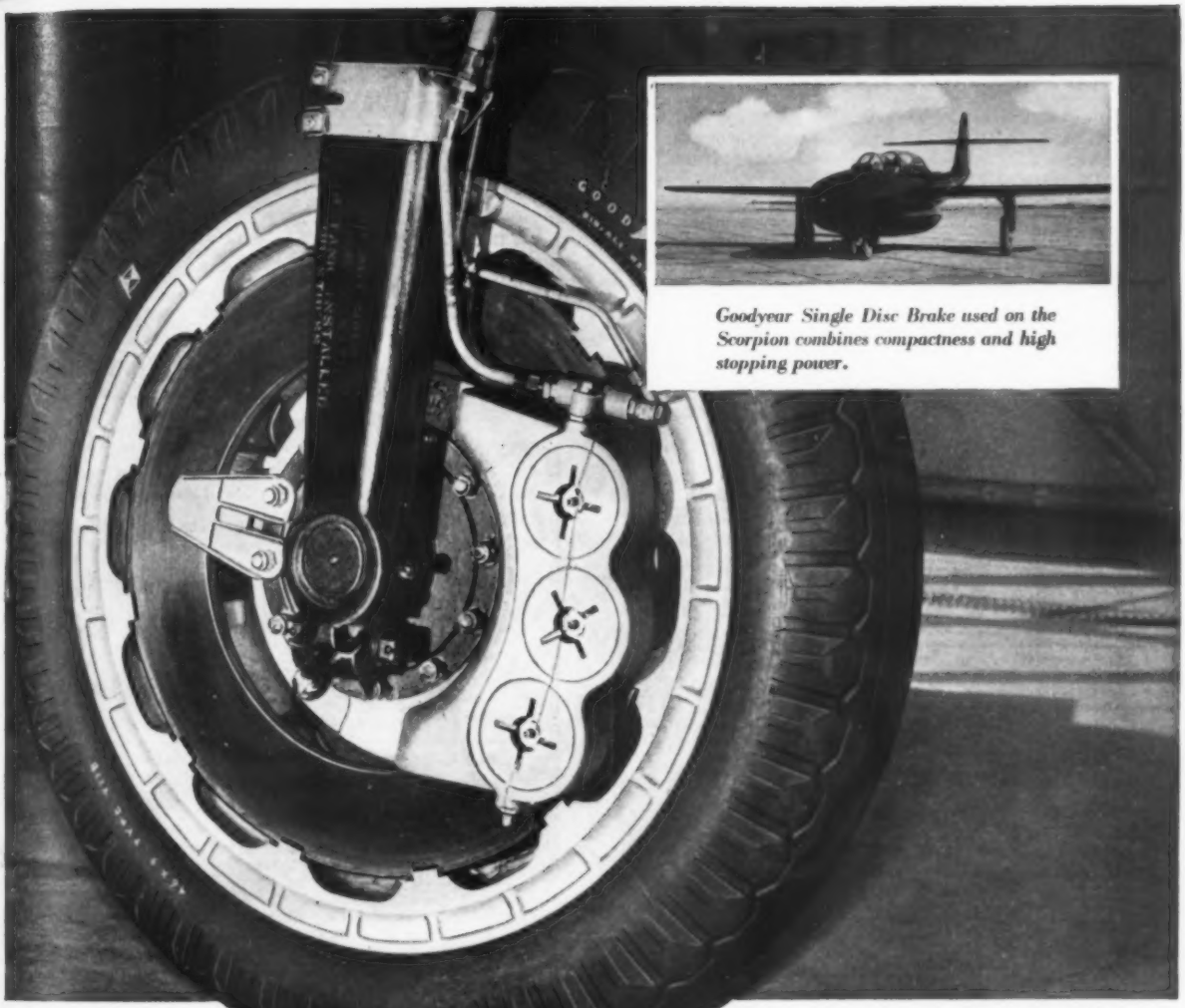

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to tire problem XF-89

Powerful, heavy jet fighters like the Northrop XF-89 Scorpion require extra-tough tires with sufficient air-cushioning capacity to safely sustain the landing impact — *yet they must be fully retractable within the thin wings.* These needs are completely met by use of Goodyear 16x9 Rib All-Weather Tread tires. This extra-high-pressure casing has super-thick tread and sidewalls to absorb impact shocks. And it is narrow enough in cross section so that tire, wheel and its powerful Goodyear Single Disc Brake all recess snugly within the wing. For complete information on these time-proved products, write: Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, California.

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MORE AIRCRAFT LAND ON GOODYEAR TIRES, TUBES, WHEELS AND BRAKES THAN ON ANY OTHER KIND

News in Brief

Devaluation of the British pound brought temporary confusion into the international air fare scene in late September and quick conferences of International Air Transport Association members to reach stabilization. Decision of IATA members meeting in London was to maintain trans-Atlantic air fares at the present dollar level but to retain sterling fares throughout Europe, Middle and Far East, Africa and Australia. Readjustments, made necessary by devaluation, mean a 44% increase in sterling fares across the Atlantic, and a 30% cut in dollar fares beyond European gateways, according to Sir William Hildred, director general of IATA. New York-London fare remains at $350, but London-New York sterling tariff rises from 86 pounds 17 shillings to 125 pounds.

Petition for merger of Monarch Airlines and Challenger Airlines which would result in a feederline system of 3,000 route miles and more than 30 stations, will be filed shortly with CAB. A merger petition involving Monarch and Arizona Airways is already on file. Combination of the three companies (Arizona is not yet operating) would extend from Billings, Mont., on the north, to Nogales, New Mexico, on the south.

The three-level fare program proposed by Northwest Airlines was suspended by CAB on September 27 and made the subject of an investigation, following protests filed by American Airlines, United Air Lines, Capital, and Mid-Continent. No carriers filed competitive tariffs.

Development of a special lightplane and related equipment for agricultural purposes is favored in a resolution introduced in the Senate by Sen. Elmer Thomas (D., Okla.). Development would be undertaken by CAA and the Department of Agriculture. Agreement to sponsor such a project was reached recently by Texas A & M College, CAA, the Department of Agriculture, CAB, and the National Flying Farmers Association.

Chicago and Southern Air Lines has confirmed that it is buying five Lockheed Constellations at announced price of "between $5,000,000 and $6,000,000". C & S made a cash down payment of more than $1,000,000. The planes will be of the L649A type, which is the same as the L-749 series except for elimination of extra wing fuel tanks. The transports will be used on domestic routes between Chicago and Houston and New Orleans, and on the international run to Caracas via Cuba and Jamaica. Delivery will start in mid-summer of 1950.

A prototype of the Scandia, twin-engined 30 to 38-passenger transport manufactured by Saab Aircraft Co., Linkoping, Sweden, was demonstrated at key points around the U. S. last month to airline and military officials and members of the press. Tour of the prototype is part of the manufacturer's market survey to determine whether there might be a need for producing the plane in this country.

Agreement signed by Trans World Airline and the Port of New York Authority obligates the latter to build $8,000,000 in hangars for TWA's exclusive use as soon as possible after designs are ready. The Authority had previously agreed to build $8,000,000 worth of hangars each for Pan American and American Airlines, and $2,000,000 each for American Overseas and Northwest.

Closer coordination of the federal government's regulatory transportation agencies was sought by President Truman in a letter directed to Secretary of Commerce Charles Sawyer. The latter was asked to make recommendations to the President by December 1. There was some speculation as to whether the purpose of the study might be to bring all transportation agencies under Commerce.

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► Twenty years ago, Transcontinental Air Transport, Inc.—now Trans-World Airlines—inaugurated its transcontinental service with a fleet of Ford tri-motor airplanes. From that modest beginning, TWA has grown into the largest user of Constellations on both domestic and foreign routes . . . into one of the great leaders of modern air travel development.

► And now to TWA, Wright Aeronautical says . . . more power to you as you continue to expand and improve your great cross-country and transoceanic air service.

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► During 20 years' operation, Trans-World Airlines . . . and its predecessor, Transcontinental Air Transport, Inc., pioneered many major advancements.

► It was the first airline to use Constellations. It initiated all-air cross-country passenger service and the employment of combination lounge-sleeper planes and 4-engine equipment on passenger schedules.

► TWA also pioneered high altitude commercial flying with pressurized cabins . . . the use of all-cargo aircraft, flight plans based on flight-route weather analysis and many other new airline developments.

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BACKGROUND & TRENDS

The Challenge of Farnborough

FROM ALL SIDES we have been told that the British are leading the world in the development of jet-powered aircraft. The most glaring example, we are told, is in the field of jet transports, although jet engine designs and even military aircraft types are involved. Last month the Society of British Aircraft Constructors paraded its accomplishments before thousands of industry representatives from 60 countries, potential customers from every corner of the world, at Farnborough, England.

The British are to be congratulated. It was perhaps the best show of its type ever presented. In addition to many new types and models of aircraft, the show featured extraordinary piloting skill which made a major contribution to the success of the show. In repeated passes across the field at 200-ft. altitude and at speeds between 600-700 mph. and in combat and aerobatic maneuvers of every type, the pilots emphasized the maneuverability of the largest and smallest ships at all speeds. And there were no accidents.

An equivalent show, in so far as showmanship is concerned, would be impossible in the United States, simply by reason of relative safety standards enforced in the two countries. Representatives from every foreign delegation asked of Americans if there is an equivalent show staged in the U. S. It was sad but true that a negative reply was necessary. In a nation of showmen, the U. S. aviation industry has failed to accept this challenge.

What does this British leadership in jet aircraft design mean to the U. S.? There are some who feel that the British will be selling their commercial transports, such as the de Havilland Comet and Vickers Viscount, to U. S. airlines within the next two years. Others feel that the U. S. will lose a sizeable export market in military aircraft.

ACTUALLY the U. S. does not have a sizeable export trade in used military aircraft and the trade in newly-manufactured models is nil. Although four fighter types and two military transports have been licensed for export, the market has not developed. The potential markets for new military aircraft and World War II models are not competitive. If it were, the British would stand to lose because of the nature of their export aircraft business.

The new batch of military trainers, fighters and bombers will increase British aircraft exports. No one stands to benefit more from such an increase than the U. S. The additional volume of business should ease the need for economic aid from the U. S. Furthermore, these new aircraft, in the hands of the British and other western hemisphere nations, will strengthen the defense of the democratic nations.

In fact, the British are not ahead of the U. S. in the military field. There are U. S. trainers, fighters and bombers to match or exceed each of the models demonstrated or unveiled to date by the British. The speeds of the Hawker P 1052, Gloster Meteor 4, Supermarine 510 and de Havilland Venom are matched by the performance of the North American F-86 which has been clocked at 708 mph, the F-93 which will exceed the 86's speed and the F-90 and F-91 which are in this same high speed category.

The English Electric Canberra bomber is a much cleaner looking aircraft than any U. S. design but its speed is matched by the North American B-45 which exceeds 550 mph and the Boeing B-47 which exceeds 650 mph. The British designs are good healthy developments for which we can be genuinely thankful.

We are behind the British aircraft industry in engine development, both in practice and in theory. The Ministry of Supply has released information confirming the 6500-lb. static thrust rating of the Rolls-Royce Avon. It is known that another model, a late Avon 2, will be rated for 8500 lbs. thrust. Still another model, yet unannounced, will be rated above 10,000 lbs. thrust. Furthermore, the British are accomplishing these goals without critical metals on which the U. S. jet engine development is leaning too heavily. This is the field in which the U. S. has genuine cause to re-evaluate its program.

THE LETHARGIC attitude of the airlines and manufacturers in the U. S. has placed both groups in an unenviable position. The de Havilland Comet fills the very bill which the U. S. manufacturers cite as an ideal future goal in performance characteristics and which the U. S. airlines have been ready to accept as the plane of 1955-60. If the fuel consumption of the Ghost engines can be cut from 1.13 lbs. per lb. of thrust per hr. to approximately .9 lbs., an entirely possible feat between now and 1952, this ship may be operating between Los Angeles and Honolulu in competition with U. S. airlines the following year.

Some one is going to get hurt. Indications are that it will be the U. S. airlines operating in direct competition with foreign lines on moderate range routes. While the British have certificated many U. S. aircraft, including the Douglas DC-6, the Lockheed Constellation, Convair 240 and Boeing 377 within the framework of an existing reciprocal certification agreement, there is serious doubt that a jet transport would be accepted in the U. S. under the same provisions. In addition to the many unknown elements involved in such an aircraft, CAA's associated responsibility for safe air traffic control procedures within the U. S. might prohibit early operation of these fast ships. In either case, the manufacturers would be protected but the airlines would stand to suffer very serious competition.

The recent devaluation of the British pound will further emphasize the economy of foreign built aircraft which should be obtainable at a fraction of comparable U. S. prices.

The list of obstacles to jet transport operation in the U. S. is long and foreboding. It includes air traffic control and enroute navigation as top items, availability and distribution of large quantities of jet fuels through the limited storage facilities of present day airports, ground handling procedures, problems of CAA certification, etc. The only way in which some of these issues will be solved will be through operational experience which must start with the availability of aircraft.

While the U. S. manufacturers and airlines are accustomed to domestic competition, they have been virtually immune from foreign competition. There are those who feel that the challenge offered by British transport developments will be the incentive needed to arouse action. The time for action was yesterday.

WILLIAM D. PERREAULT.

"X" IS THEIR WORK SHOP

Exploring the unknown . . . in rocketry, pilotless aircraft and guided missiles . . . is the important job of an able group of mathematicians, physicists, electronic, metallurgical and aeronautical engineers at The Glenn L. Martin Company. Revolutionary concepts of electronic guidance, instrumentation and navigation . . . delicate servo-mechanisms . . . spectacular power plants and powerful new fuels . . . are their breath-taking tools.

In an age when control of the air is vital to national security, Martin research once again leads the way . . . with the greatest advances on the most varied combination of top-level projects yet undertaken . . . in this dramatic new phase of flight. THE GLENN L. MARTIN COMPANY, BALTIMORE 3, MARYLAND.

RIGHT—*Propelled by an engine without moving parts, tracked by radar, piloted by remote control, Martin Gorgon IVs (built for Navy propulsion research) have made the longest flights ever achieved by pilotless aircraft powered with rocket engines.*

LEFT—*Viking rockets, another product of Navy-Martin teamwork, will soon go up in the vicinity of 200 miles into the ionosphere and telemeter invaluable information back to the ground for future research. These amazing rockets will go many miles beyond the V-2, reaching a maximum speed of 8,000 ft. per second.*

Martin AIRCRAFT

Builders of Dependable Aircraft Since 1909

EDITORIAL

(CONTINUED FROM PAGE 1)

In California where an intra-state battle has been raging on the high-density Los Angeles-San Francisco route between four certificated scheduled carriers and a half-dozen intra-state operators, there has been a very intriguing development with the launching of an intra-state shuttle service by Western Air Lines of California, Inc. While Western Air Lines officially disavows any connection between its company and the new California subsidiary except in the chartering, operating and servicing of the airplanes, it is scarcely any secret that Western Air Lines decided it was time to fight fire with fire.

With 73-passenger DC-4's, Western Air Lines of California has gone after the density traffic with a vengeance—and charging 3.04c a mile. Its thinly-veiled connection with Western Air Lines has meant a popular acceptance of the $9.95 service and business during the first month was exceptionally good. In the meantime Western's regular Convair service has been holding up quite well with an apparent minimum of diversion.

What Western has done in California can be duplicated in some other sections of the country and on such long-haul routes as Los Angeles-San Francisco-New York.

Since the CAB has committed itself to further experimentation we think it would be wise to remove the restrictions of late P. M. departures. In other words, let the experiment continue in the fullest sense and see what happens.

On the other hand there should be no misconception about a high-density low-fare service. It has its limits and the CAB cannot afford to benefit the few to the disadvantage of the many.

It is the CAB's responsibility to develop a sound air transport system for the country as a whole and the goal, as we have mentioned many times before, must be lower fares for all air travelers and not just for those shuttling between big cities. The passenger at Des Moines, Birmingham, Roanoke and Syracuse is entitled to a fare dividend, too. Somewhere in between is a balance in the national interest—the kind of a balance that builds up a strong air transport industry of permanent use to the nation.

'Use It Or Lose It'

THE TEMPORARY certificate of Challenger Airlines, feeder airline serving the Wyoming area in the Rocky Mountains, expires in 1950. Donald A. Duff, Challenger's president, knows full well that the CAB will evaluate the service very carefully before reaching a decision to renew the certificate.

Mr. Duff did what we think is a very smart bit of public relations. He wrote to every city and county official, every newspaper editor, every civic club president and many important business people, in the entire territory served by his feeder airline, and laid his cards on the table. "Use it or lose it" was his theme song. He explained that the fate of Challenger was in the balance, that the service had to be justified economically in order to continue. Did the people of these isolated communities want air service? If so, they had better see that it was patronized.

The letters had an immediate affect. The entire area has been stirred into action and is more than casually aware now of the problems of a feeder airline. From early reports Challenger is getting wholehearted support—the kind of support that means tickets and mail and express.

Good Public Relations

FOR A COMPANY that has been rather noteworthy for negative and unimaginative public relations, American Overseas Airlines did itself especially proud by flying fifty well-known European newspapermen and editors to the U. S. in a Stratocruiser recently. From all reports the trip was a great success, not only for the aviation good that it did but for the national good as well. It rates four stars. The irony is that American Overseas is on the block for sale just at the time when it had about solved its acute postwar personnel problems and is beginning to show something in the way of public relations. Since the proposed sale was first announced, the AOA personnel morale was dragged extremely low and for obvious reasons. The unfortunate original personnel appointments abroad combined with numerous other factors make one wonder if AOA was ever destined to exist in the plans of its owners in the first place. Despite the present morale situation, it is at least refreshing to find AOA doing a top-notch public relations job even if it does happen to be an isolated instance.

A Fateful Quarter Century

WHEN THE 25th anniversary of the first round-the-world flight was celebrated in Santa Monica September 23 a very appropriate slogan dominated the observance. It was: "25 Years That Changed the World." It was fitting that that historical flight in those early Douglas World Cruisers should be recognized a quarter of a century later.

Not the least significant feature of the celebration was the presence in person of four of the six Army lieutenants who completed the circuit of the globe. And the fact that of the original six, five are alive, healthy and active. Leigh Wade, now an Air Force general on active duty in Greece, was unable to attend. But Les Arnold, now v. p. of Eastern Air Lines; Henry Ogden, a retired aircraft industry executive; Erik Nelson, a retired Air Force general now doing consulting work; and Jack Harding, head of his own company in Dallas, all were present for the observance. The sixth lieutenant, Lowell Smith, met accidental death as a colonel in the Air Force.

That first flight took from March to September to complete. Only three out of the original four airplanes and six of the total of eight flyers made it all the way 'round. Flying time on the 27,553-mile journey amounted to 15 days, 11 hours and 7 minutes. It was only 25 years ago—but an entire chapter of air history has been written since.

WAYNE W. PARRISH

The Birdmen's Perch

There's no end to Gulf Service, b'gosh!

Got a letter from J. A. Sambuco, Bronx, N. Y. as follows:

"I was wheeling down the runway when I saw one of Gulf's putt-putts parked on the apron. The Orange Disc reminded me that I'd forgotten to check my gas shut-off valve before I cracked the throttle. I chopped throttle, braked, and stopped at the end of the runway, and as I taxied off the runway, the engine quit.

"Sure enough, the valve was closed. I now tip my hat to every Orange Disc I pass!"

Thank you, J. A.

Can we move that Gulf Plane now?

SAD STORY FILE

Seems there's a fella who *doesn't* know about that good Gulfpride Aviation Oil —Series D—the world's finest detergent dispersant oil for horizontally opposed engines.

He keeps plodding along in his putt-putt, constantly griping about the poor lubrication he gets and the frequency of his overhaul periods. Tsk, tsk!

Someone should tell him (will it be you?) that Gulfpride is the only aviation oil that's Alchlor-processed. This is the important extra step—after refining the fine crudes—that eliminates carbon-and-sludge formers from Gulfpride Oil.

This means super lubrication! This means overhaul periods can be extended up to 1000 hours, too! Because Gulfpride—series D—frees stuck valves and rings and *keeps* them free longer.

All of which adds up to extra colossal pleasure and enjoyment when you use Gulfpride Aviation Oil—Series D.

Somebody inform our friend!

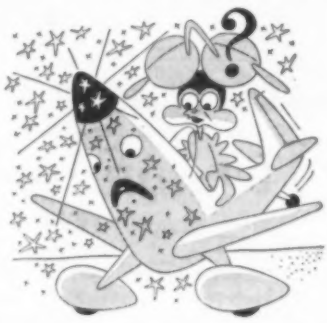
LITTLE KNOWN FACTS DEPT.

So this girl was just about to say "Yes" to the fella.

"Have you ever sent a Little Known Fact About Well Known Planes in to the Birdmen's Perch?" she asked. "Did you send proof in with the Fact? Did you win one of those gorgeous, engraved-type Commissions as a Perch Pilot (bottom rung)?"

Well, the fella hadn't . . . and of course she jilted him. And that's only one of the horrible examples of catastrophes that occur to people who don't send "Facts" to us *with proof!*

Avoid this grievous fate, win a commission, and cover yourself with glory



the way J. Ross Hunter of Sikeston, Missouri, did with:

"The breaker-timed system in an 18-cylinder engine is expected to deliver 2,250,000,000 sparks before lubrication or replacement is normally expected!"

See how easy it is?

Don't remain unsung forever! Send your Little Known Fact About Well Known Planes—with PROOF—to this address:
GULF AVIATION DEPT., GULF BUILDING PITTSBURGH 30, PA.

Gulf Oil Corporation and Gulf Refining Company . . . makers of

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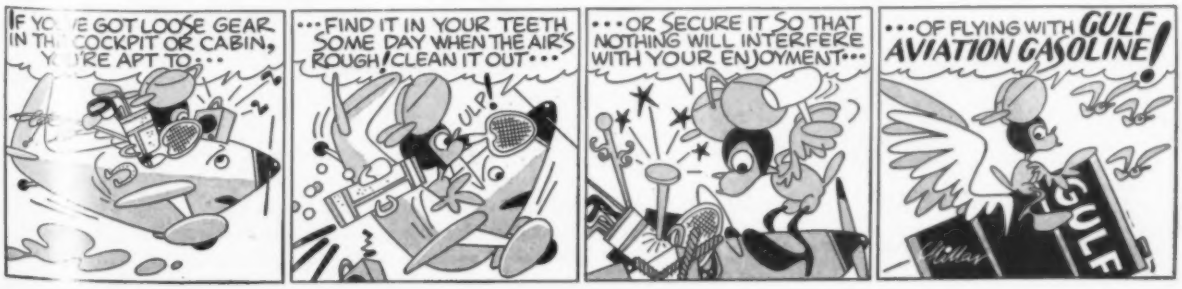
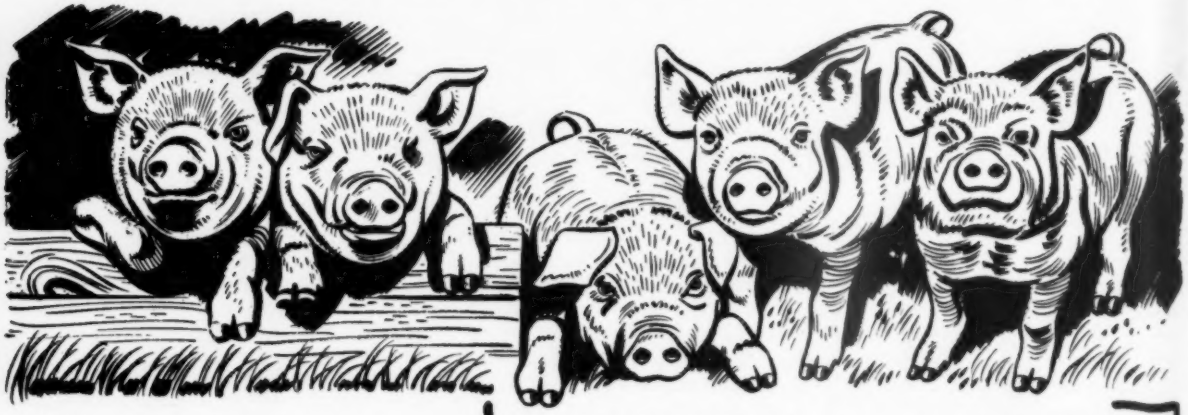

IF YOU'VE GOT LOOSE GEAR IN THE COCKPIT OR CABIN, YOU'RE APT TO···
···FIND IT IN YOUR TEETH SOME DAY WHEN THE AIR'S ROUGH! CLEAN IT OUT···
ULP!
···OR SECURE IT SO THAT NOTHING WILL INTERFERE WITH YOUR ENJOYMENT···
···OF FLYING WITH GULF AVIATION GASOLINE!
GULF

ALONG THE WAY...OF *TWA*

THESE LITTLE PIGS "FLEW" TO MARKET....



BLUE-BLOOD PORKERS...PRIDE OF THE MID-WEST...RECENTLY TOOK TO THE AIR ABOARD A COMFORTABLE ***TWA*** (TRANS WORLD AIRLINE) ALL-CARGO PLANE BOUND FOR ROME. PIGGIES WERE CONSIGNED TO ITALIAN EXPERIMENTAL AGRICULTURAL STATION AT CREMONA. WHY NOT LOOK INTO THIS EASY...LOW-COST WAY OF SHIPPING ALMOST ANYTHING ALMOST ANYWHERE? MAY SAVE YOU MONEY.

UP...UP...UP...

TWA AIR CARGO AND MAIL CARRIED FIRST SIX MONTHS OF 1949 EXCEEDED 17,800,000 TON MILES. IN LIKE PERIOD, ***TWA*** INTERNATIONAL AIR CARGO INCREASED 87%. EVERY DAY...MORE AND MORE SHIPPERS USE ***TWA***. BETTER GET RATES...THEY'RE LOWEST IN ***TWA*** HISTORY!

USE STREET ADDRESS

HELPS SPEED SHIPMENTS TO DESTINATION. COMPLETE ADDRESS PREVENTS MISTAKES...ELIMINATES DELAYS... INSURES PROMPT HANDLING.

"GENEVA"

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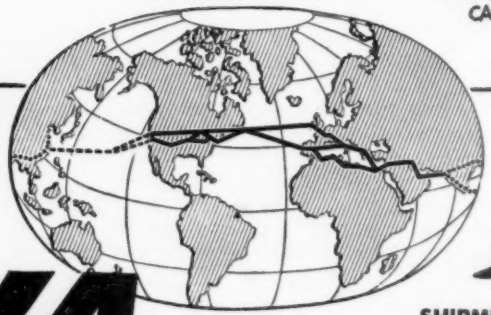

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American Aviation

Volume 13
Number 9

British Plane Development Program Shows Results

By William D. Perreault

LONDON—At the Flying Display and Exhibition in Farnborough, England, there was evidence to indicate that the British government might get sizeable returns on its investment in aircraft development. With aviation representatives of 60 countries in attendance, the Society of British Aircraft Constructors held its 10th annual show. On display to the potential markets of the world were 40 aircraft types which were primarily the result of an industry-government development program.

To insure effective competition among British aircraft manufacturers, the government had engineered competitive contracts. The Ministry of Supply ordered one or two aircraft from a number of recognized manufacturers. By underwriting the development in this way, the government hoped to insure leadership in the aviation field and provide adequate aircraft to the military services and commercial operators. As aircraft are ordered and production starts, the manufacturers will pay back certain sums to the government to offset prototype costs.

Cross Section. The development program has been quite successful. Of prime interest were the commercial aircraft. These ranged from the exciting 500 mph jet-powered de Havilland Comet to the 130-ton, eight-engined Bristol Brabazon, an aircraft of doubtful merit. In between were the Vickers Viscount, a 53-passenger turbo-prop transport which will be competitive with the Convair Liner; the Handley Page Hermes V, an 84,000-lb. transport which has been ordered by BOAC, the largest of the turbo-prop transports; the Mamba Marathon, the smallest of the turbo-prop aircraft with no immediate sales prospects; and the Armstrong Whitworth Apollo, a 40-passenger, 43,000-lb. turboprop-powered transport competitive with the Viscount and a likely replacement for some foreign-operated DC-3's.

There were also some promising conventional aircraft such as the Airspeed Ambassador, a 48-passenger, 52,000-lb. transport now on order by British European Airways and scheduled for use in 1952; the Percival Prince, a 12-passenger, 10,650-lb. transport (10 are being built on speculation); and the de Havilland Dove, an 11-passenger transport grossing 8,500 lbs. The manufacturer is readying the Dove for certification in the United States.

High and Fast. The Comet is the most interesting of the group because it appears to meet the design objectives of American manufacturers. That is, it is a highly efficient 36-passenger transport powered by turbo-jet engines and cruising at about 500 mph. Since the Ghost engines are buried within the wing structure, it appears to have obtained the cleanest of aerodynamic form. The large wing area has kept wing loading at levels below some present day transports, probably 45-55 lbs.

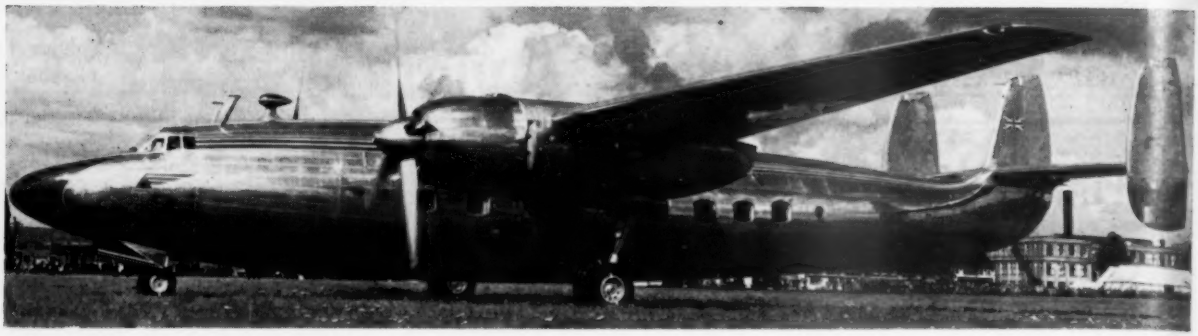
Although the flight tests to date have not included operations at maximum gross weight, they have involved moderate loads, speeds up to mach .8 and altitudes up to 40,000 ft. The engines normally cruise at 9,000 rpm and at 40,000 ft. altitude and 500 mph. consume about 1.12 lbs. of fuel per hour per pound of thrust. The engines are easily accessible and all four have been pulled by a 12-man crew in one and one-half hours.

Between the normal engine nacelles in each wing, the de Havilland Aircraft Co. has designed a minor nacelle to handle the newly-announced Sprite cold rocket. The Sprite is rated at 5,000 lbs. thrust for nine seconds. It weighs 925 lbs. when fully loaded, 350 lbs. when empty; Maximum diameter is 20 in. and overall length is 7 ft. Use of these rockets, except in tropical operations or at extremely high airports, is not anticipated if engine development continues satisfactorily.

More Details. Pressurization, a critical item since all performance figures are based on operations at 40,000 ft., is obtained by tapping air off the perimeter of the centrifugal compressor in the Ghost engine. This simple, rugged system has yet to be proved and is a major factor in the test program. A tentative gear arrangement to replace the 5-foot diameter single wheels now used has been designed. This gear uses four smaller wheels on each gear with a swivel arrangement very similar to that employed on U. S. track-type landing gears. In use this gear would eliminate the bump on the upper wing surface which now houses the gear.

The most spectacular features of the

VICKERS VISCOUNT: With 32 model 700 Viscounts already on order, there are prospects of additional sales almost immediately. Unconfirmed price has been reported at $320,000.



AIRSPEED AMBASSADOR: Not all the aircraft were jet powered. This is a conventional airplane to fill an existing demand. British European Airways has ordered 25.

airplane are the manner in which the engines pass directly through the main spars, a remarkable engineering achievement, and the metal-to-metal bonding which largely replaces riveting in the Comet. Except in very limited areas, the stringers and frames in the fuselage are joined to the fuselage skin by Redux, a heat-applied adhesive.

Convair Competitor? Next in order of commercial importance is the Vickers Viscount. With price rumored to be about $320,000, the turboprop-powered Viscount has attracted major interest because of its extremely low noise level in the cabin and almost total lack of vibration. The Rolls-Royce Dart engine which powers the Viscount is currently developing 1,000 hp. plus about 300 lbs. thrust. Fuel consumption is .87 lbs/hp/hr. Fuel capacity of the model 700 long-range version will be 1800 imperial gallons.

The prototype Viscount, which has been in testing for a year has an 89-ft. wing span, is 74 ft., 6 in. in length and has a gross weight of 40,400 lbs. The model 700, the production ship which has been ordered by British European Airways (20) and British Overseas Airways (12), will have a wing span of 94 ft., length of 81 ft., 2 in. and a gross weight of 48,000 lbs. Cruising speed of this model is estimated at 328 mph on the basis that the engines will be uprated from 1,000 bhp to 1,400 bhp before the airplane enters service in late 1951.

The principal advantage of the Viscount is its low noise and vibration levels. The prototype actually cruises at 276 mph. Eventually savings will be experienced through lower aircraft and engine maintenance. It is felt that the Dart engines will start commercial life with a minimum overhaul life of 500 hours. Until engine component costs are lowered, the ease of overhaul will be counteracted by the high cost of replacements.

Largest and Smallest. Handley Page, Ltd. is manufacturing the largest and smallest of the turbo-prop transports, the Hermes V and Mamba Marathon. Both of these ships are adopted from earlier piston engine airplanes and as such provide interesting data on relative merits of jet power vs. reciprocating engines. The Hermes V is an adaptation of the Hermes IV, now on order for BOAC. Gross weight of the turboprop-powered Hermes V is 84,000 lbs. compared to 82,000 for the Hermes IV, airspeed is up 62 mph., and payload is upped by 5,130 lbs. There are no orders for the Hermes V and it is likely that the actual production model will be the Hermes VI at 86,000 lbs. gross and with certain other refinements including lift flaps that will improve take-off performance.

The Mamba Marathon has a wing span of 65 ft., length of 52 ft., 1½ in. Gross weight is 18,000 lbs. Originally the Marathon was powered by four Gypsy engines with a total hp. of 1380 and cruising speed of 211 mph. carrying 20 passengers. Substituting two turboprop Mamba engines with a total shaft hp. of 2,020, the Marathon payload is raised by 1022 lbs., the airspeed is increased to 254 mph., and the range is increased by 475 miles while maintaining the same gross weight. The payload and range increases can be tempered by routes over which the aircraft is to be operated.

Regardless of these improvements, there is little indication of a market for the Marathon. The one order which did exist when the aircraft was being constructed by Miles failed to materialize with the change in manufacturers.

Another Winner. The Armstrong Whitworth Apollo is a promising turboprop aircraft which accommodates 40 passengers, grosses at 43,000 lbs. and cruises at 305 mph. It is powered by four Mamba turbo-props rated for 1010 hp. plus thrust of 307 lbs. Maximum range including holding and alternate reserves is 900 miles at 20,000 ft. and 276 mph. Again, no firm orders have been placed for the ship but several foreign airlines are said to be showing interest.

Other commercial aircraft of interest: The Cierva Air Horse, a 24-passenger

FARNBOROUGH, 1949: A small corner of a big field. The tents and hangars at the extreme right housed some 200 static exhibits of the aviation industry. Although not as spectacular as the flight displays, a major contribution to the show's effectiveness.

DE HAVILLAND COMET: With an improvement in fuel consumption figures, the feeling is that the Comet could operate between Los Angeles and Honolulu by 1953.

BRISTOL BRABAZON 1: Only $4,800,000 of the $48,000,000 invested in developing the eight-engined Brabazon represent aircraft costs. The balance might yet be recovered.

A-W APOLLO: A 40 passenger turbo-prop powered transport of clean design. With no orders yet confirmed there is high hope that foreign markets will be tapped.

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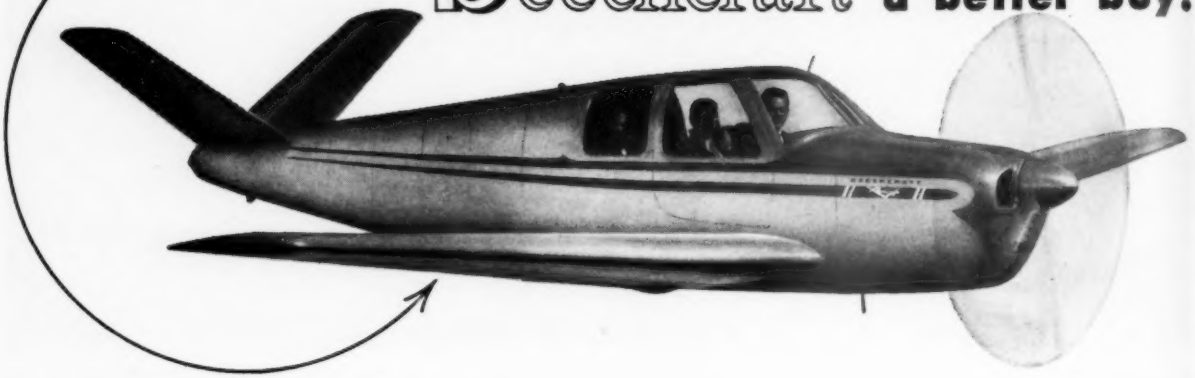

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★ **Extra utility** — The Beechcraft Bonanza is a business plane, engineered for extra usefulness as a business vehicle. It can be operated the year around. It can get into small, unpaved landing fields as well as modernized airports. It is ready to go—365 days a year!

★ **Extra comfort** — From the moment you step (not climb!) into a Beechcraft Bonanza through its wide, auto-type door and settle yourself in its uncrowded 4-place interior, you're conscious of superb comfort. Its sound-proofing is the standard of comparison!

★ **Extra luxury** — Skilled design and placement, with superb interior appointments, make the Beechcraft Bonanza an aerial limousine. You'll lean back and relax and enjoy air travel as never before! Its only rival for sheer luxury is the multi-engined airliner itself!

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Beechcraft

BONANZA MODEL A35

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three-rotor helicopter which the manufacturers claim has been ordered by U. S. operators whom they decline to name. The Air Horse has a cruising speed of 120 mph, gross weight of 25,000 lbs., payload of 3-4 tons, maximum still air range of 440 miles. Also, the Bristol type 171 Mk. 2, a five-seat helicopter of conventional design. The Bristol 171 will ultimately be used by British European Airways in operating mail routes across England. In the lightplane class, of which four appeared in the exhibition, the Chrislea series 4, a four-place ship, attracted the most interest. The upper part of the fuselage folds upward from a point near the top of the cabin. This permits the ship to be used as an ambulance or as a four-place plane without any extensive basic alteration.

CIERVA AIR HORSE: As ugly as they make them but apparently a practical design. The manufacturer claims that firm orders have been placed by unidentified U. S. interests.

British Military Aircraft

At first glance the Avro 707, a delta wing fighter which looks very much like the Convair XF-92, appeared to be the most spectacular of the military ships in the show. Arriving at Farnborough with only 2½ hours previous flight time, the 707 did not take part in the flying demonstrations. It is powered by a single Rolls-Royce Derwent engine rated at 3500 lbs. s.t., has a wing span of 33 ft., length of 30 ft., 6 in.

The Avro 707 is a research airplane with a top speed around 400 mph. It will be used for obtaining basic data on low speed operations, landings, etc., and then the thick chord wing will be replaced with one designed to explore the upper speed range up to sonic speeds. The combined data will be used to design a twin-jet, delta wing bomber having the engines buried in the wing structure.

Fighter-Bomber. The flight demonstrations proved that the English Electric Canberra bomber rated top among the military ships. The Canberra has a gross weight of about 40,000 lbs., an empty weight of slightly over half this figure and a reported bomb-carrying capacity of 10,000 lbs. Actually it is difficult to see how the 65 ft., 6 in. fuselage can accommodate much over 8,000 lbs. Wing span of the Canberra is 64 ft. and maximum height only 15 ft. 7 in. With the ship on the ground the top of the fuselage is only slightly above a mans head, possibly 7-8 ft.

With a very conventional wing plan form and empennage assembly it seemed unlikely that the ship was scheduled for high speeds. Actually the two Rolls-Royce Avon engines mounted in the wing structure give the clean-lined Canberra a speed of about 550 mph. These Avons feature axial compressors and are rated at 6500 lbs. static thrust. Actually they are known to be capable of about 7,000 lbs. while a later version, the still-unannounced Avon 2 will be rated for 8500 lbs.

One of the high points in the aerial display were the climbing rolls and tight maneuvers made by the Canberra bomber shortly after take-off and the almost straight-up climb. The pilot demonstrated extreme maneuverability on the part of the airplane at all speeds from about 120 mph. through 500 mph. Since the Farnborough show it has been announced that the Canberra will be built in Australia. Since the Nene engine is also being built there, it is assumed that the lower-powered jet may be used in this production line. If so, there will be some loss in the Canberra's top speed.

600 mph and Up. Four fighter aircraft, the Hawker P 1052, the Vickers type 510, the de Havilland Venom, and the Gloster Meteor, were all put through their paces at speeds of about 650 mph. The Hawker P 1052 is an interceptor fighter powered by two Rolls-Royce Nene engines rated at 5,000 lbs. static thrust. It is the only fighter in the group designed to handle supersonic speeds and is the successor to the Hawker 1040 which was licensed for manufacture in Australia last week. Dimensions and other particulars have not been released.

The Vickers 510, another Nene-powered aircraft, has a span of 38 ft., 8½ in., length of 38 ft., 1 in. and height

ENGLISH ELECTRIC CANBERRA: A low-slung, fast-moving light bomber. Three will be completed this year. Last week it was licensed for manufacture in Australia.

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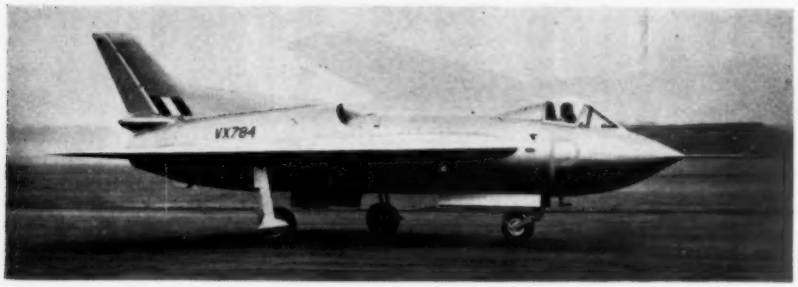
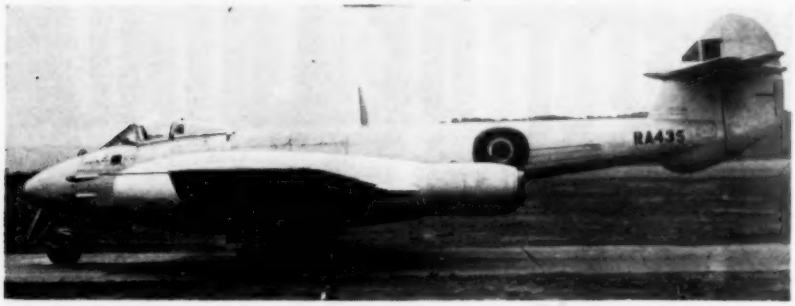
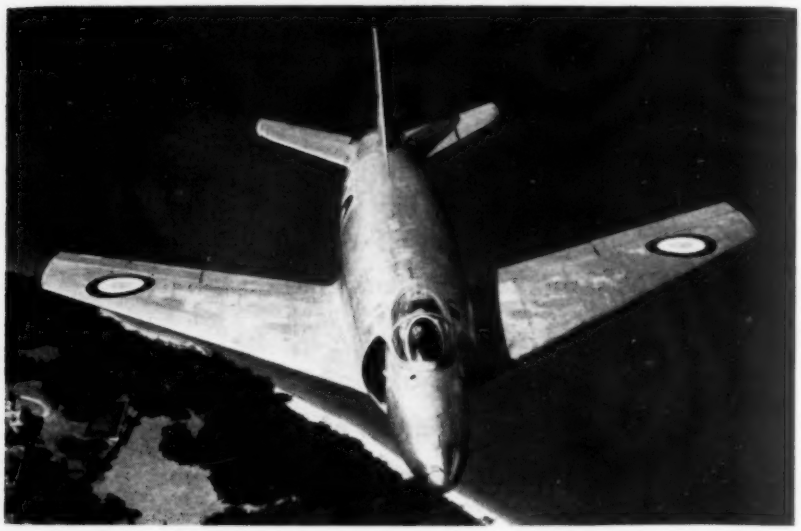


AVRO 707: Arrived at Farnborough with 2½ hours total flight time, did not take part in flying display. A research plane to investigate low speed characteristics of the Delta wing.



GLOSTER METEOR 4: At a cost of 25% additional weight and 2½ times normal fuel consumption, afterburning (reheat) increases thrust by 48%. Note the rugged tail pipe.



VICKERS ARMSTRONG TYPE 510: An experimental fighter with speed. During one pass across the field the 510 reached mach .9, slightly under its limit of mach .97.

of 8 ft., 9¾ in. The Gloster Meteor 4 appeared in two versions in the show. One was equipped with two Rolls-Royce Avon engines rated at 6500 lbs. thrust each while the other was powered with two RR Derwent engines rated at 3500 lbs. thrust but equipped with afterburning (reheat). Current day afterburning systems in British use increase power by approximately 48% with a 25% increase in overall weight and 2½ times more fuel consumption. The use of reheat in this and in a standard Vampire resulted in considerable change in the physical characteristics of the engine installation.

Unexpected Speed. Another surprise package was the Westland Wyvern, a turboprop-powered torpedo fighter using a single Armstrong Siddley Python engine rated at 4100 shaft hp. The eight-bladed contra-rotating propeller gave this sleek fighter a speed above 500 mph. in passes across the field, probably the fastest propeller-driven fighter ever flown. The Wyvern has a span of 44 ft., length of 42 ft., 3 in.

Heavy Bomber? There are indications that British manufacturers are seriously working on heavy bomber designs with A.V.Roe, Handley Page and de Havilland most prominently connected with the work. This is the only class of ship in which very little development has been announced. In addition to the work of Avro on a delta wing bomber, mentioned above, Handley Page's bomber design is also said to be of strange configuration. While it is natural to assume that any design advanced by de Havilland would be based on the Comet design, the ever increasing emphasis on designing jet aircraft for one purpose alone, may point the way to major variations.

At one time Americans criticized the British for "putting all their eggs in one basket" because they ignored the reciprocating engine while placing all research and development effort on jet engine designs. Today there is little doubt that the British made a wise choice. Their jet engines are generally more advanced than U. S. designs, get greater service lives and are built of materials which are not so scarce as those used in American designs. Actually Napier is known to be working on a compounded reciprocating engine but in general the British continue to move away from this type powerplant.

DE HAVILLAND VENOM: 66% more power than the basic Vampire, a thinner wing and moderate sweepback. A Ghost engine for high altitudes and high mach number.

IATA Finds Few Solutions For International Aviation

By WAYNE W. PARRISH

THE HAGUE, Netherlands, Sept. 16—The world's major scheduled airlines concluded a week's sessions here today after wrestling with many common problems and coming forth with a few concrete suggestions and recommendations affecting commercial air transport throughout the world.

It was the annual meeting of the International Air Transport Association, successor since the war to the International Air Traffic Association which was founded here at The Hague 30 years ago. The host company was KLM, Royal Dutch Airlines, celebrating its 30th anniversary. The president who serves until next September was Dr. Albert Plesman, president of KLM, also celebrating his 30th year in aviation.

The problems confronting the airline heads were abundant and the solutions all too few.

No Air Freedom. Quite obviously first on the list is the continued trend toward restrictions against freedom of operations by the world airlines. The failure of the world to agree on a multilateral convention has brought a flood of bilaterals, the bulk of which are restrictive in one manner or another. Freedom of the air is just a meaningless expression and not a few speakers, including Dr. Plesman, took the occasion to point this out.

Next on the list of problems is currency restrictions. More than one airline is unable to transfer currencies it has built up in some countries. There was not much that IATA could do about this except to adopt a strong resolution and protest to all of the world governments.

For public consumption, especially, there was a lot said about facilitation. Facilitation is a formal word covering the multitude of red tapes and blue stickers blocking the free movement of peoples and goods among the various countries.

There was also a general statement in rather legalized language which, if interpreted liberally, might be construed to mean that the world airlines favor tourist fares. But all the statement really did was to authorize the three world traffic conferences (which have the power to act subject to government vetoes) to study the matter and adopt fare differentials. The next meeting of the North Atlantic conference will be in Mexico in November.

CAB Headache. Behind the scenes and under the counter (since IATA rarely if ever says what it thinks in plain language) there was plenty of kicking against the U. S. Civil Aeronautics Board. It seems that our own CAB is quite a thorn in the side of the European airlines (they should hear what the U. S. carriers say about it!) and the general feeling seemed to be that if each country of the world had a CAB like the U. S. CAB, there just wouldn't be any international air transportation.

Warren Lee Pierson
President-Elect of IATA

Also behind the scenes there was plenty being said about the nonscheduled operator, but there wasn't even a resolution attacking the nonskeds when the meeting closed. It seems that the IATA resolutions committee couldn't fix up a resolution against the non-skeds that didn't sound like the scheduled airlines were opposing all of aviation, so they just cussed the non-skeds privately and let it go at that.

When the assembly opened on September 12, there was a certain amount of talk that IATA might not survive. Some of the European carriers were mighty unhappy about Pan American Airways' proposals for tourist fares and about PAA's vetoing all sorts of actions in the North Atlantic traffic conference. But this issue was resolved at least for the time being by a change in voting procedures, and, so that nobody could object, PAA went along with the change.

Under the new system a unanimous vote won't be required. A majority vote will be sufficient but a special committee has yet to decide what constitutes a majority vote. This change of voting procedure was probably the most significant single act of IATA because otherwise IATA was heading for some sort of a split.

Pierson Elected. Another stepping stone to harmony was the election of Warren Lee Pierson, chairman of the board of TWA, Inc., as the president-elect who takes office next September. It had been no secret that Pan American had hopes of being the host for the 1950 meetings and had taken some steps, at least informally, to push its case. Juan Trippe was to be the president and the IATA executive committee was quite well sold on the idea and assumed he would be voted in without a whimper.

It wasn't until the other American delegates arrived in The Hague that they learned of the PAA moves and in shorter time than it takes to gulp down three Dutch Bols, the American carriers were unified in deciding that Mr. Trippe wouldn't be the next president.

Just how far they actually went in making their decision isn't known, since everything in IATA operates within a mysterious aura of secrecy, but at least one U. S. airline delegate (and a high-up one, too) served a very determined and definite ultimatum on at least one member of the IATA executive committee that eight U. S. airlines would resign immediately if Trippe were elected president. Despite the customary denials there is not the slightest doubt of the ultimatum—as some of the European carriers know full well.

The IATA executive committee was not only shocked but quite nonplussed. No such crises had ever arisen before. These Americans! Simply scandalous! But American ingenuity came to the rescue. The American delegates told the executive committee that IATA merely had to select the *country* where the next meeting would be held and leave the presidency up to the delegates from that country. The sigh of relief from the IATA executive committee at this graceful "out" produced a warm front which spread all the way to the Arctic Circle.

Once IATA had made this decision—that the presidency would be left up to the next host country—the U. S. delegates had no trouble in picking Mr. Pierson of TWA. Whatever ambitions PAA had were left outside with the wooden shoes. And once the U. S. delegates won their battle, they forgot all about their earlier gang-up to stop Mr. Trippe—not only forgot about it but denied that they had ever thought of it in the first place.

Actually, PAA had never made a formal bid for the next assembly, it had just been doing some preliminary work on it. And in justice to PAA, it joined forces with the other U. S. carriers in making the selection of Pierson unanimous and Pierson's nomination was actually made by John Leslie, vp of PAA, who is one of the ablest airline executives in the U. S. and in one of toughest spots.

Fight Inevitable. Sooner or later the battle within IATA between the various U. S. carriers was bound to happen. It happened fast and furiously. The majority won. As one U. S. airline executive said privately, the U. S. carriers had to let the other IATA members

know once and for all that there was more than one airline in the U. S.

Juan Trippe flew to The Hague for one day's sessions and he attended two social functions. It was his first personal participation in IATA. Relatively few of the world's airline executives had ever met him personally. There seemed to be genuine pleasure that he attended in person and there is not the slightest doubt that his presence was one of the more significant events in a week-long series of dull, dry sessions.

By and large, American airline executives feel frustrated by the great amount of formal protocol and rigamarole and time-wasting procedures which put IATA something on the level of a United Nations body where nobody says what he thinks and where everything is supposed to be so very, very secret, as if the taxpayers and stockholders didn't have anything to say about the whole matter.

The five days of formalities could have been boiled into a couple of days, in the opinion of the more time-conserving Americans, but then there wouldn't be enough time left for state receptions, formal dinners, etc. and the usual abundance of meaningless phrase-making.

Yorkshire Humor. The only "life" in the meetings was provided by Sir William Hildred, the director general, whose Yorkshire sense of humor never fails him. But even Sir William shocked some of the staid formalized Dutch and a few other guests at the stag dinner which KLM threw for the members.

Sir William had some good stories which were mild for a Pullman smoking room—but a little tough on the goody-goodies. But then, M. Rene Briend, head of Air France, did some excellent singing so the Hildred jokes were forgotten about. Can you imagine an American airline president singing at a formal banquet? I mean when sober—and classical music, too. I can't either. But Briend has an excellent voice and I must say that he added at least one realistic and stimulating bit to a formal affair.

A touching moment came at the closing session when Per A. Norlin, president of Swedish Air Lines, paid tribute to Dr. Plesman. The KLM president was so deeply moved that when he got up to respond he choked up and tears streamed down his face. He kicked the floor to regain his composure and proceeded with the meeting.

As far as other developments are concerned, there were two new members of the executive committee elected:

Pierson and Gilbert Perier, president and managing director of Sabena Belgian Airlines, were elected to the executive committee, succeeding Dr. Albert Plesman, president of KLM Royal Dutch Airlines, and John Slater, former chairman of the board of American Overseas Airlines and president of American Export Lines Inc. Re-elected were W. Hudson Fysh, chairman and managing director of Qantas Empire Airways; Maj. J. R. McCrindle, member of the board of British Overseas Airways Corp. and international adviser for the three British airlines; Paulo Sampaio, president of Panair do Brasil, and Maj. Gen. C. J. Venter, manager of South African Airways.

Juan T. Trippe, PAA president, was decorated in absentia by the Netherlands Government at an official reception, along with Norlin, of Swedish Air Lines; Briend of Air France; Major McCrindle of BOAC, and Perier of Sabena.

'No Show' & 'Open Jaw'

The terms "no show" and "open jaw," which have been used informally in airline traffic offices for several years, will become a formally recognized part of airline language throughout the world because of their inclusion in the International Air Transport Association's "Glossary of Traffic Terms."

A "no show" is a customer who buys a ticket or makes a reservation but does not take up his space. "Open jaw" describes a trip routing such as London-New York, which is in effect a round-trip, even though the points of origin and final destination are not the same.

Committees

The executive committee of IATA made the following appointments to standing committees for the year:

Financial Committee: To serve one year, T. C. English, American Overseas Airlines. To serve two years: P. Brabant, Sabena; Amos Hiatt, Pan American; J. C. Younkins, Panair do Brasil; R. L. Weir, British European Airways; R. Montarnal, Air France; T. Sorenson, Danish Air Lines.

Legal Committee: To serve one year, Col. D. Zepos, Hellenic Airlines. To serve two years: K. H. Staple, BEA; W. A. Steenstra Toussaint, KLM; S. E. Gates, AOA; P. J. Brennan, Aer Lingus; Dr. A. Pandolfo, FAMA (Argentine); A. M. Conradie, South African Airways.

Technical Committee: To serve two years: K. H. Larsson, Swedish Air Lines; Major G. de Meiss, Swissair; Capt. J. C. Kelly-Rogers, Aer Lingus; Peter Redpath, Norwegian Air Lines; R. Dupre, Air France; Paul Goldsborough, TWA; A. Vernieuwe, Sabena; D. J. Cox, Northwest Airlines; and W. J. Townley, CPA (Canada).

Traffic Committee: To serve one year, A. Aballay, FAMA; to serve two years, W. G. Lipscomb, Pan American; Leon Schoevaerts, Sabena; P. G. Lawton, BEA; P. Beck Nielsen, Danish Air Lines; R. D. Stewart, BOAC; F. von Balluseck, KLM; and S. K. Kooka, Air India.

Resolutions

The following are the more important resolutions adopted by the International Air Transport Association at its closing meeting:

Aircraft Interchange: To enhance the economic utilization of commercial aircraft, IATA resolved (a) the establishment of an international aircraft register with the purpose that aircraft thus registered may freely be used by airlines of the contracting States and (b) the elimination of any legislation of the contracting States which prevents aircraft which are not owned by one of the nationals of a State from being registered in the registers of such State.

Fare Differentials: The establishment of a single standard of fares may result in injustices as between IATA members, so the executive committee is requested to recommend to the three traffic conferences that they give immediate consideration to the establishment of fare differentials based on such factors as aircraft types, aircraft usages, the character of traffic and whether regional or trunk-line operation is involved.

Penalties Stiffened: For any alleged breach by an IATA member of a Traffic Conference obligation, a commission investigating the breach is authorized to impose upon any member found guilty one or more of the following penalties: (a) Notification to all Conference members of the findings of the commission (b) reprimand (c) a fine for each breach not in excess of $25,000 (U. S.) or (d) expulsion from IATA.

Facilitation: All IATA members are urged to support the facilitation program of ICAO (Annex 9) and to take all possible steps with their respective governments to securing adoption of Annex 9 and making effective its provisions.

Commercial Rights: IATA is unanimously of the opinion that the present system of exchanging commercial rights between governments restricts the full development of international air transport and urges the governments to attempt to establish a more stable basis for international air transport to the mutual benefit of the public and the operators of air services and airports.

Liability Convention: Since the ICAO legal committee is engaged in a study of the revision of the Warsaw and Rome Conventions, and a draft of a collisions convention, the IATA executive committee is requested to cause to be initiated an appropriate study of the form and substance of the subjects which might be included in such convention and the means of implementing the same.

Airline Accidents: Both the aircraft operator and the manufacturer involved should be permitted access to the scene of an airline accident and should be entitled to attend throughout the course of official investigation and to have access to all evidence taken thereat.

Transfer of Revenues: IATA urges on all governments the view that on the grant of bilateral or multilateral international agreements respecting commercial flying rights it should in all cases be implied that appropriate facilities will also be conceded to the parties concerned to enable them freely to transfer their revenues thereby derived. It also requests the immediate removal of all discriminatory practices and state controls relating to currencies.

Traffic Resolutions: The effectiveness of Traffic Conference resolutions affecting tariffs and fares has been extended from six months to 12 months.

Expanding Air Coach Plans Keep Fare Scene Unsettled

By WILLIAM V. HENZEY

Despite exerted efforts by several scheduled carriers and the Civil Aeronautics Board there is little indication of an immediate stabilization of airline fares either in this country or abroad. On the contrary, there is good reason for believing the coach fare will continue to spread throughout the U. S., the family plan in its present form is here indefinitely, and fare differentials for different types of aircraft and traffic—though not approved for Northwest Airlines for October 1—will, nevertheless, receive the serious consideration of domestic and international lines in the next few months.

The coach fare picture today is primarily one of expansion. Limited chiefly between northern cities and between Kansas City and several points west prior to CAB's September 7 policy statement, coach operations will have been started over 6,500 additional unduplicated route miles by November 1.

Included in this expansion are north-south operations on both coasts, from San Diego to Seattle, and from New York to Miami. Included also is a route from New York to New Orleans via Pittsburgh, another from New York to Houston via Washington, Atlanta, and New Orleans, and one from Chicago to Portland.

The San Diego-Seattle operation is to be inaugurated by Western Air Lines on October 15. Initial plans are to operate one round-trip flight daily utilizing 73-passenger DC-4 equipment departing from origin points at approximately 10:30 p.m. Typical of the fares for this service is the Los Angeles-Seattle fare of $40.85 which is $22.70 less than the standard fare.

N. Y.-Miami Coach. On the east coast, both Eastern Air Lines and National Airlines, two newcomers to the coach business, will start service between New York and Miami on November 1, one day after expiration of round-trip summer excursion fares. Both will serve Washington and Jacksonville as intermediate points at the usual 4c a mile coach level. DC-4 aircraft equipped to seat 56 or more passengers will be used.

Significantly, the New York-Miami operations will be performed during a period when traffic is at a peak level to and from Miami, and statistics to be developed should settle, once and for all, the question of whether or not such an operation is economically feasible during the heavily-traveled winter season. Doubting its feasibility in the past led CAB to block numerous similar proposals of National over a two-year span.

Another problem in this area too is the position of Delta Air Lines. Paralleled on the Jacksonville-Miami segment by Eastern's and National's proposed operations, and on other segments by both Eastern and Capital, Delta complained to CAB and asked that all such competing coach fares be suspended pending investigation. However, with CAB apparently in favor of the experiments, Delta may be the next to enter the field whether desirous or not.

New Capital Operation. Capital Airlines, one of the foremost exponents of coach fares, was given a green light by the Board and started its new operation between New York and New Orleans on September 25. Cities on this segment receiving the low-priced service for the first time include Knoxville, Mobile, Birmingham, and Atlanta, as well as New Orleans. Slated for disapproval by CAB in its statement of policy, the operation was approved when Capital agreed to utilize equipment with 56 or more seats.

Simultaneous with the inauguration of this operation, Eastern Air Lines, too, began coach service from New York to New Orleans via Washington, Atlanta, and Birmingham. Ten days later, on October 5, the carrier is scheduled to expand the operation to include Houston and a more localized service between Atlanta, Birmingham, and Mobile. Equipment being utilized is 56-passenger DC-4's with one daily flight in each direction for a start.

In an entirely different territory, Northwest Airlines started a Chicago-Portland service on September 22, thus adding to its previous coach operations between Seattle, New York and various intermediate points. The new program was inaugurated with three flights a week on Mondays, Thursdays, and Saturdays. However, beginning October 5, this will be increased to a daily basis. Saving on a coach flight between these terminals at the new $70 fare will be $43.75.

DC-3 Coaches. The remainder of the coach picture continues practically unchanged. TWA's DC-3 operation between Kansas City and Los Angeles has been extended to December 31, with CAB approval "to allow additional time to explore the feasibility of using high density equipment on the route." Continental's DC-3 service between Kansas City and Denver, although not approved for a continuation beyond September 30 at this writing, will in all likelihood, be extended to December 31.

On the half-fare family plan front, all is harmonious. Eastern, Delta, C&S, and National became parties to the consolidated family plan tariff on September 15. All American, Trans-Canada, and Southern Airways joined on September 25, and Western and Inland will participate on a system-wide basis commencing October 15. Now, except for Colonial and Wisconsin Central, every domestic certificated carrier, trunk or feeder, is or will soon be a member of the tariff which has been extended to June 30, 1950.

Western, though entering the coach and family plan fields, filed tariffs to cancel its 5%-reduced no-meal fares on October 15. Reason, the carrier said, was not that the experiment failed, but that a CAB ruling prohibited segmentizing the no-meal structure, a move which WAL officials contend was necessary to properly distinguish between its coach and standard services on the west coast.

Seattle P. A. System— These photos show the push-button public address system in use at the new Seattle-Tacoma International Airport for automatically announcing arriving and departing flights (American Aviation, August 1). Betty Adams (left), Pan American stewardess, is shown inserting a disc in the Seeburg player which transmits the recorded announcements and musical recordings to 133 loudspeakers throughout the terminal. At the right, passenger agent Stephanie Selcho demonstrates a control panel to Russell Wilson, Northwest Airlines, and Martin Geary, Pan American. One button fades the music and another starts the appropriate recorded arrival announcement. Sixty records are needed to cover the present daily flights at the airport

'Buy America' Law Blocks Beaver from U. S. Sales

A depression-born law, almost wholly out of accord with current national trade policies, has been used effectively by the Air Force to block purchase of special-use aircraft from foreign manufacturers.

The law, popularly known in government purchasing circles as the "Buy America Act", was approved March 3, 1933 and it provides that government departments and agencies shall purchase for public use only those products manufactured in America from American raw materials, except in emergency situations.

Air Force procurement officials at the Wright-Patterson Air Force base in Dayton are said to have recently cited the act to prevent demonstration of the de Havilland (Canada) Beaver—a high wing, monoplane developed for use in the bush country.

Interest in this plane had been shown by Col. Bernt Balchen, commanding officer of the 10th Rescue Squadron, Elmendorf Air Force Base, Alaska. Balchen, it was said by U. S. representatives of de Havilland, desired to procure a number of Beavers for use in the rugged country of Alaska because of the Beaver's ability to get into and out of tight places, its climb characteristics, general maneuverability and its cargo and passenger carrying capacity.

It was contended that no American-manufactured plane could meet these performance characteristics.

Others Interested Also. Other government departments, with jurisdictional responsibilities in Alaska, also are said to have expressed an interest in the purchase of the Beaver but have been stopped by the Buy America Act, de Havilland representatives said. These include the Departments of Agriculture and Interior and the Civil Aeronautics Administration.

The Beaver, however, has been demonstrated to Army officers in this country. Recently it was flown for the military at Fort Bragg, N. C., and Army officials were said to have been enthusiastic over its performance.

Restrictions of the Act do not apply to civilian purchases and U. S. airline purchases of such aircraft as the de Havilland jet Comet, said to be in the negotiation stage, would not be affected by the Act as it applies only to purchases by government departments.

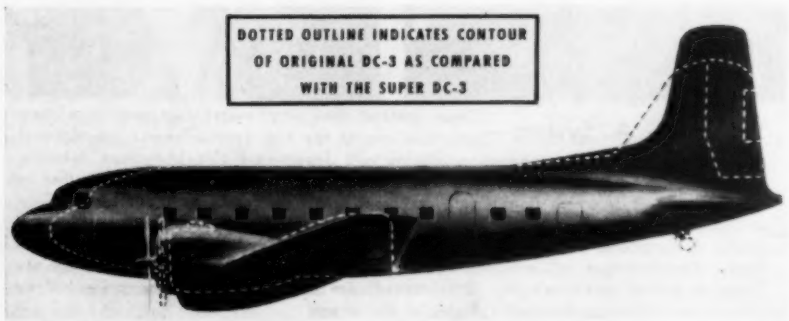
Against Trade Policies. Considering that the Congress on June 12, 1934, enacted the Reciprocal Trade Act which lowered century old barriers against foreign trade and in the light the more recent Congressional enactments, such as the Economic Cooperation Act, whereby this country is furnishing funds to European countries for purchases of equipment here, the U. S. de Havilland representatives are of the opinion that the Buy America Act is not only obsolete but diametrically opposed to present U. S. trade policies.

They point out that if the Air Force were permitted to buy aircraft such as the Beaver from Canada, this country definitely would be helping the foreign trade situation while at the same time getting value received for its money.

Only recent exception which the Air Force is said to have made involved purchase of parts for Douglas DC-4 aircraft from Canadair. These purchases were made under the emergency provisions of the Buy America Act. The parts were used in the repair of aircraft used in the Berlin Airlift operation.

The inconsistency of the Buy America Act, passed during the 1932-33 depression and only a little more than a year before this country, by basic act, lowered the barriers to foreign trade, will be called to the attention of the second session of the 81st Congress.

Buys Super DC-3's—Coincident with the Washington visit of Douglas Aircraft's Super DC-3 demonstration tour, Capital Airlines announced purchase of three of the planes as the first step on a "pay as you go" re-equipment plan. Shown, as the announcement was made, are (l. to r.): Donald W. Douglas, president of Douglas Aircraft Co.; J. H. Carmichael, president, Capital Airlines; Donald W. Douglas, Jr., director of the Douglas contract requirements & testing divisions; R. G. Lochiel, Capital Airlines vice president & treasurer; and James B. Franklin, vice president-operations, Capital.



Capital Purchases Three Super DC-3's

Capital Airlines has announced the proposed purchase of three Douglas Super DC-3's on a "plane by plane—pay as you go" basis. The new planes, the first industry order of the improved DC-3's, will be three Douglas-owned fuselages modified to seat 31 passengers and cruise at about 253 mph. Scheduled for delivery early in the spring of 1950, the first three Super DC-3's will cost $251,000 each.

Capital is programming the purchase of nine more Super DC-3's in 1951 and eight more in 1952. The total of 20 airplanes will be used to replace 23 present-day DC-3's now in use over Capital routes. Indications are that Capital will purchase several new four-engined airplanes some time during 1950 to use on the long-haul routes but this is dependent on the improved financial position of the company.

Powerplant type to be used in Capital Airlines' Super DC-3's has not yet been decided. Douglas is offering the airplane with Wright 9HE, 1820 engines of 1475 hp (1525 hp with water injection) or Pratt & Whitney R-2,000-D5 or D7 engines. Depending on engine combination and use of automatic feathering, gross weights range from 28,000 to 31,000 lbs.

Two More Feeders Start Service

Two new feederlines, Wiggins Airways and Central Airlines, started operations last month and Southern Airlines inaugurated service over the final segment of its certificated route system.

Wiggins Airways, designated to serve a New England feeder system since June 13, 1946, opened one segment of its Route AM-79 on Sept. 19. The initial segment, served by two round trips daily, is from Boston to Albany, via Worcester, Springfield (served through Westfield Airport), and Pittsfield.

Other segments of the Wiggins routes are to be opened at intervals of several weeks. The company is using twin-engine five-place Cessna equipment.

Using its own personnel at Boston and Springfield, the feeder has made arrangements for others to handle its business at other route points. American Airlines is performing this service at Albany, Greylock Airways is the agent at Pittsfield, and Universal Aviation at Worcester.

Central Airlines started service over the Fort Worth/Dallas-Oklahoma City segment of its feeder routes on Sept. 15, using single-engine Beech Bonanzas as equipment and using local fixed-base operators as general agents at intermediate stops.

Central expected to open a second segment about October 1 from Fort Worth/Dallas to Tulsa, via Sherman-Denison, Durant, Holdenville and Okmulgee. This will be followed shortly by a route from Fort Worth/Dallas to Texarkana, via Greenville and Paris, and shortly thereafter by the Oklahoma City-Wichita route. Longest and final segment to be opened will be Tulsa to Amarillo. Keith Kahle of Oklahoma City is president.

In the south, Southern Airways, which opened its first segment in June, inaugurated service over the final segment, from Columbus, Ga., to Charleston, S. C., on September 15, less than 100 days after final certification.

Central's First Flight—Josh Lee, CAB Member, was a passenger on Central Airlines' inaugural flight on September 15. Central, using eight Beech Bonanzas, is the first certificated airline to use single-engined equipment. Shown at Oklahoma City's Will Rogers Field are: (l. to r.): Stanley Draper, manager, Oklahoma City Chamber of Commerce; Lee; Keith Kahle, president and general manager of Central; Bill Cunningham, air carrier inspector, Fourth Region, CAA, Ft. Worth; and J. Wiley Richardson, president of the Oklahoma City Chamber of Commerce.

4-Place Helioplane Available Next Year

The original two-place design of the Helioplane, unorthodox lightplane with characteristics unparalleled among present-day planes, will not be built commercially, due largely to CAA type certification regulations, but a four-place version of the plane will be available next year, it was learned last fortnight.

Disclosure that someone will build a four-place ship incorporating improvements based on flying experience with the two-place design was made before the Northwest International Aviation Council meeting in Spokane, Wash., by Dr. Lynn Bollinger, co-developer of the plane with Dr. Otto C. Koppen.

Bollinger said the Helioplane will not be manufactured by the present Helio Corporation of Boston. Either a new corporation will be formed or an existing manufacturer licensed to produce the plane. He said availability of the plane next year will depend upon "prompt decisions and interpretations of certification rules," which he stated have been assured by CAA officials.

The plane's designers, it was disclosed, dropped the two-place design after CAA regulations presented problems in barring approval to produce problems in test quantity of the planes to be parcelled out to a selected group of pilots who would fly the planes long enough to locate all the "bugs" in it.

The rules say that CAA may issue only an experimental license until a plane gets its official type certificate (which the Helioplane does not yet have), and the kind of normal usage the designers wanted to give the planes during the testing, such as flight instruction, charter flying, etc., would be forbidden with planes carrying an experimental license.

Only alternative left in this case was to ask the Civil Aeronautics Board, which writes the rules, to draft a new regulation with regard to the Helioplane. When Bollinger and Koppen found this would require a minimum of four to five months, they decided to drop the two-place design and concentrate on a four-place Helioplane.

PO Sends First Two Star Route Proposals to Board

The first two air star route proposals to be advertised under the new air star route law have been sent to CAB for clearance by the Post Office Department. One is for service from Honolulu to Kalaupapa, on the leper colony island of Molokai; the other, now being operated but due to expire shortly, is from Charlevoix, Mich., to St. James, Beaver Island, in Lake Michigan.

Certification is required from CAB that proposed routes do not conflict with development of air transportation as contemplated under the Civil Aeronautics Act. Procedure is for CAB to publish the request for certification in the Federal Register, thus affording interested parties a chance to comment.

Post Office Department is also looking into the feasibility of establishing another air star route in the Snake River section of Idaho.

Data on the new law have been released by the Post Office Department in a bulletin titled 'Information Regarding Air Star Routes.' It outlines the approach to obtain such a route, giving details on how to submit bids, requirements of accepted bids, requirements of contract, and other information.

"Bidders for proposed air star routes and their sureties are urged to acquaint themselves fully with the laws of Congress relating to contracts for the carrying of mail," it states. "For further information regarding the transportation of mails on star routes, see sections 97.1 to 97.73, inclusive, Postal Regulations, Edition of 1948." The Post Office also emphasizes that "Since the need for any air star route will be determined by the Post Office Department after a thorough investigation by field officials, there is no need for prospective contractors sending in proposals for operation of air star routes to the Post Office Department."

Copies of the statement may be obtained from Robert Burgess, Deputy Second Assistant Postmaster General, Air Postal Transport, Post Office Department, Washington 25, D. C.

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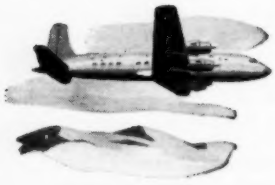

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PAA Bids $17 Million Cash For AOA in Revised Deal

Financial arrangements paving the way for the purchase of American Overseas Airlines by Pan American Airways were completed last week, and all that was needed to make the big deal an accomplished fact were (1) CAB approval, (2) the President's approval and (3) approval of AOA stockholders.

Things moved fast beginning September 13, date on which the purchase agreement on file with the CAB was to expire unless renewed or extended. Directors of the two corporations met and came up with a revised agreement, effective until March 13, 1950, and renewable on that date for another three months, changing the proposal from a stock transfer to a cash transaction.

Terms of the previous agreement provided for transfer of 1,193,844 shares of PAA common stock to American Overseas in exchange for its routes and other assets. The new document provides that PAA shall pay $17,450,000 cash for AOA's assets and shall also assume the latter's liabilities as of the signing date. Now standing at over $3,000,000, these liabilities might amount to several millions more by next year, as AOA probably would have to draw on its credit for payment of such Boeing Stratocruisers of the eight on order as might be delivered by then.

New Credit. Meanwhile, American Overseas' credit agreement for financing the Stratocruiser equipment was expiring and new arrangements had to be made. A group of eight banks headed by Chase National Bank and Bankers Trust, both of New York, agreed to lend the carrier up to $10,000,000 and extended the credit agreement to June 30, 1950, or to 90 days after delivery of the last Stratocruiser to AOA, whichever date is the earlier. This protected AOA's principal stockholder, American Airlines, pending outcome of the merger plan.

For its own part, Pan American also had some credit arrangements to make, and it was stipulated in the revised agreement, filed September 13, that either party would be free to terminate the agreement on or before October 26 in the event PAA should not be able by October 10 to procure a line of credit totaling $59,000,000.

Pan American on September 20 announced that 30 of the nation's largest banks had agreed to provide it with varying amounts aggregating $59 million, with the largest single participation said to be $7,500,000. Proceeds of these loans would be used by Pan American to make the $17,450,000 cash payment to AOA, to write off from $3 million to $10 million of the latter's liabilities, to purchase certain aircraft, and to eliminate Pan American's indebtedness under outstanding bank loans.

Meanwhile, the proposed merger was getting attention in Congress. Sen Joseph C. O'Mahoney (D., Wyo.), leading Senate opponent of monopoly, told a Senate Judiciary Committee hearing that if the merger is approved by CAB, Pan American will have established what amounts to practically a monopoly in international air transportation.

The senator's remarks were made during committee consideration of a bill which would supplement existing laws against unlawful restraints and monopolies. It was reported that he had called upon the Senate Interstate and Foreign Commerce Committee for information touching on the PAA-AOA merger, which he was studying with the possible idea of bringing CAB-controlled mergers within the purview of the legislation.

Pioneer to Establish New Headquarters at Dallas

Pioneer Air Lines will transfer its headquarters from Houston Municipal Airport to Love Field, Dallas, within the next few weeks, a company spokesman has said. About 300 employes' families will be affected by the move, which was made necessary after the Air National Guard had served notice that it desired occupancy of the hangar it has been leasing to Pioneer not later than October 31.

Pioneer will erect a new hangar and office building on the southeast side of Love Field, and its employes will move there from Houston as soon as construction is completed. Due to the stage of development of Houston's airport master plan, the feederline was unable to locate a permanent site on Houston Municipal after receiving its eviction notice from the Air National Guard, which holds a 99-year lease on the hangar. The ANG fighter wing has been using nearby Ellington AFB in connection with its reserve training program, but facilities there are said to be no longer adequate.

Chicago and Southern Air Lines, which leases one-third of the Houston hangar from Pioneer, was also affected by the ouster.

Air Force Reverses Decision To Evict TWA from K. C.

The Air Force late last month decided to let Trans World Airline continue its occupancy of Fairfax Field, Kansas City. The airline previously had been advised that its present lease, which expires October 31, 1950, would not be renewed because the facilities would be needed for an expanding Air Reserve program.

Strong opposition from the Kansas City Chamber of Commerce and TWA, however, caused the Air Force to reverse its decision.

Under present plans, not yet fully completed, the AF will turn the field over to the city, which in turn can lease the facilities to TWA. The city has not yet signified its willingness to accept the airport.

The Air Reserve unit now at Fairfax will remain there until June 30, 1950, when it will be moved to another location.

MIAMI DAILY NEWS Photo by E. N. Hamilton

Scattered Commandos—Newly-modified C-46 transports, owned by United Services for Air, were destroyed at Morrison Field, West Palm Beach, during the recent Florida hurricane. Although tied down and weighted with sandbags, the eight Commandos were ripped up and scattered by the 155 mph wind. Three others were heavily damaged. 17 private lightplanes were demolished and six damaged in the collapse of a large steel hangar at the field. Storm damage to commercial and private aviation in Palm Beach county totaled close to $1 million.

Johnson Named General Manager of Air Cargo, Inc.

Adm. Emory S. Land, president of the Air Transport Association, has been elected president and a director of Air Cargo, Inc., to succeed Fred M. Glass, resigned. Emery F. Johnson, secretary, was given the additional title of general manager and will be responsible for active management of the company. Russell S. Bernhard, attorney for ACI, was elected assistant secretary, and Robert Guest will continue to serve as treasurer.

Johnson has been an officer of ACI since it began operations and before that was with the Air Transport Association and United Air Lines. Assisting Johnson temporarily in an advisory capacity will be a three-man committee composed of James W. Austin of Capital, Paul Brattain of Eastern, and Amos Culbert of American.

It was also voted at the special meeting of the board of directors to drop ACI's consolidated handling of air freight at Detroit's Willow Run Airport on the ground that substantial increases in flight operations of several carriers at Willow Run and consequent increases in carrier personnel complements had made available adequate free time to perform the cargo functions on an individual carrier basis at a lower cost.

The carriers expressed complete satisfaction with the management of the consolidated terminal and praised the standards of operational efficiency attained. Operations personnel of the seven certificated carriers serving Willow Run will meet in Detroit within the next few days to perfect arrangements for the assumption of individual carrier cargo functions.

Union Offers Reward In Attack on NPA Pilot

The National Pilots Association placed a large ad in a Miami newspaper Sept. 14 offering a $1,000 reward for information leading to the arrest and conviction of four "gangsters" who, NPA said, "threatened, kidnapped and brutually beat" H. E. Duddie, a furloughed National Airlines pilot and association member.

Duddie quoted his assailants as warning him not to vote in the forthcoming union jurisdictional election and stating they were "out to get all National Airlines pilots who are members of National Pilots Association."

W. T. Babbitt, regional vice president of the Air Line Pilots Association in Miami issued the following statement: "ALPA had nothing to do whatsoever with this alleged beating. The strike against National Airlines has been over 10 months. There would be utterly no point in our resorting to such tactics. We've followed the proper legal procedure all the way through. There has been no strong arm stuff at any time."

The National Mediation Board, which recently concluded a special hearing in Miami on eligibility of pilots to vote in an election to determine the future bargaining agent of NAL pilots, is expected to decide the issue around October 25. NPA petitioned for the election, claiming it represented more than 51% of the pilot personnel.

Technical Committee Decides National Air Race Future

The question of assuring the safest operation of National Air Races in the future was referred September 23 to a committee of "technical aviation experts" to be appointed by Roger Wolfe Kahn, chairman of the contest board of the National Aeronautic Association. This decision was reached at a joint meeting of the contest board, representatives of the CAA and other interested government agencies and the Professional Race Pilots Association.

Steps discussed at the meeting for consideration by the special committee include: increasing the altitude at which the races are flown; relocation of the closed course to more sparsely settled localities; additional safety equipment to be worn by pilots, and extension of the present rigid medical requirements for pilots. There was no suggestion that the races be discontinued or that they be moved from Cleveland, present site.

The NAA group voted to recommend to the Air Race Committee that: (1) race courses be laid out so that the distances shall fall in metric units (kilometres) instead of in miles as at present, so that records can be officially certified by the Federation Aeronautique Internationale; (2) the Bendix Trophy Race be flown over a 2,000 kilometre course opening and closing in Cleveland; and (3) a new 500 cubic inch displacement class be added to the Goodyear closed-course races.

Previously the Air Force had ruled that its planes will fly no more jet closed-course races at the National Air Races.

CAB CALENDAR

Oct. 3—(Docket 2796) Hearing in Hughes Tool Co.-Transcontinental & Western Air Control Case. (Phase II) 10 a. m., Room of U. S. Commissioner, 520 U. S. Post Office and Courthouse Bldg., Temple & Spring Streets, Los Angeles. Examiner Edward T. Stodola.

Oct. 3—(Dockets 3041 and 3818) Hearing in Seaboard & Western Airlines, Inc. International Cargo Route Case. Tentative. Examiner Warren E. Baker. Postponed from Sept. 26.

Oct. 7—(Docket 4038) Hearing on application of "IBERIA," Compania Mercantil Anonima de Lineas for a foreign air carrier permit between Madrid and San Juan. Tentative. Examiner Curtis C. Henderson.

Oct. 10—(Docket 3350) Hearing in IATA Agency Resolutions Case. 10 a. m., Room 2065, Temporary Building 4, Washington, D. C. Examiner Herbert K. Bryan. Postponed from September 12.

Oct. 10—(Docket 3977) Hearing in Monarch-Arizona Airways Merger Case. Tentative. Examiner James Keith.

Oct. 17—(Docket 3661) Prehearing conference in Through Service Investigation—Twin Cities-Washington—Detroit-Washington. 10 a. m., Room 2015, Temporary Bldg. 5, Washington, D. C. Examiner, William F. Cusick.

Oct. 17—(Docket 3748 et al.) Hearing in Service to Springfield, Massachusetts Case. 10 a. m., Conference Room "C," Departmental Auditorium, Washington, D. C. Examiner Walter W. Bryan. Postponed from Oct. 3.

Oct. 17—(Docket 2719 et al.) Hearing in Air Freight Tariff Agreement Proceeding. 10 a. m., Conference Room "A," Departmental Auditorium, Washington, D. C. Examiner Herbert K. Bryan. Postponed from Sept. 21.

Nov. 14—(Docket 946 et al.) Hearing in New York City Helicopter Service Case. Tentative. Examiner Ferdinand D. Moran.

Aviation Calendar

Oct. 3-8—20th Anniversary Convention, The Ninety-Nines, Waldorf-Astoria, N. Y.

Oct. 4—National Fire Protection Assn. Committee on Aviation and Airport Fire Protection meeting, Wings Club, Hotel Biltmore, New York, N. Y.

Oct. 5-8—SAE 1949 National Aeronautic Meeting and Aircraft Engineering Display, Biltmore Hotel, Los Angeles.

Oct. 7-8—American Air Mail Society convention and exhibition, Edgewater Beach Hotel, Chicago.

Oct. 8—"Cradle of American Aviation Day" air show and industrial exposition, Roosevelt Field, L. I., New York.

Oct. 12-15—Air Reserve Assn. convention, Long Beach, Calif.

Oct. 13-15—Airport management and operations conference sponsored by University of Oklahoma and Southern Flight magazine, Norman, Okla.

Oct. 17—Fall Meeting, New York State Aviation Council, Hotel Syracuse, Syracuse, N. Y.

Oct. 17-18—New York State Airport Management Conference, Hotel Syracuse, Syracuse.

Oct. 23-25—CAA Regional Administrators Conference, Oklahoma City, Okla.

Oct. 25-27—National Assn. of Travel Officials 9th annual convention, Cosmopolitan Hotel, Denver, Colorado.

Oct. 26-27—CAA Non-Scheduled Flying Advisory Committee meeting, Oklahoma City, Okla.

Oct. 30—Third annual Air Fair, San Francisco Airport. (Junior Chamber of Commerce auspices).

Oct. 30-Nov. 2—NASAO Annual Convention, New Orleans, La.

Nov. 3-4—SAE Fuels and Lubricants Meeting, Chase Hotel, St. Louis, Mo.

Nov. 9-10—Aviation Distributors and Manufacturers Ass'n annual meeting, French Lick Springs Hotel, French Lick, Ind.

Jan. 9-13—SAE Annual Meeting and Engineering Display, Hotel Book-Cadillac, Detroit, Mich.

Jan. 13-15—18th Annual All American Air Maneuvers, Miami, Fla.

March 6-9—American Road Builders' Assn., annual meeting (including Airport Division meeting), Netherlands Plaza Hotel, Cincinnati, O.

April 16-20—American Association of Airport Executives annual meeting, Neil House Hotel, Columbus, O.

April 17-19—SAE Aeronautic Meeting and Aircraft Engineering Display, Hotel Statler, New York City.

June 4-9—SAE Summer Meeting, French Lick Springs Hotel, French Lick, Ind.

International

Nov. 1—ICAO AGA Division meeting, Montreal.

Nov. 10—IATA COM Middle East.

Dec. 10—IATA COM European.

Between the Lines

By James J. Haggerty, Jr.

Low Jet Engine Potential

We received the somewhat disquieting information the other day, while attending the annual inspection of the National Advisory Committee for Aeronautics' Lewis Flight Propulsion Laboratory at Cleveland, that the industrial capacity of the nation's aircraft engine manufacturers would be sorely taxed should an emergency demand a jet engine production rate of 100,000 units a year.

This is disquieting because an emergency would certainly require that many, and perhaps more, engines annually; during the last war we reached a peak production of 257,000.

The reason for this limit is the shortage of a number of materials essential to jet engine production, chiefly colombium, tungsten, cobalt, chromium and nickel.

NACA, therefore, is now involved in a new type of research. Not only does the search for methods of producing more and more power continue, but, in addition, NACA's scientists are now trying to develop jet engine components that are more easily producible, i.e., whose materials are more readily available.

Three Approaches. There are three approaches to this problem. The first, obviously, is to develop new alloys. The second is to study design methods which might permit a reduction in the amount of strategic materials used in jet production. The third line of research is the development of new cooling methods, thereby making possible the use of lower temperature alloys of ready availability. Focal point of this research is the turbine wheel, which accounts for 30% of the critical elements in a jet engine.

NACA has been at this type of research for some time now and has tested and classified a number of materials according to their strengths at high temperatures, resistance to thermal shock, etc. Samples of the most promising will be tested under simulated jet operation conditions.

Fuels, too, are being studied for large scale producibility. The original kerosene-type jet fuel, known as JP-1, was not readily producible—a barrel of crude oil would yield only six per cent. A more recently developed fuel JP-3, is more readily available (about 50% from a barrel of crude.) While NACA says its is "sustantially equal" to kerosene, it has a number of undesirable characteristics.

Fuel research, therefore, is directed at the elimination of such characteristics while at the same time trying to produce a fuel blend of still greater availability.

Rocket Plane. The spectacular rocket motor is always a subject of interest at propulsion meetings. NACA officials stated that they are quite confident that a military fighter-type rocket plane of limited, but effective, endurance can be developed in the near future. Abe Silverstein, director of research for Lewis Laboratory, pinned it down a little more—he said that rocket flight of one hour's duration under military flight requirements is "in sight." He would not, however, elaborate.

Research toward sustained rocket flight is aimed at the development of new fuels. NACA has discovered fuel combinations which have power ratings as much as two and one-half times that of the alcohol-oxygen compound which first powered an airplane faster than sound. Experiments are continuing with these fuel compounds to see which offers the best combination of power, range and efficiency.

We also had a chance to take a look at the world's largest supersonic wind tunnel, the test chamber of which measures eight by six feet. The tunnel, which can simulate speeds from about 900 to 1500 miles per hour, gets its wind speed from three General Electric motors driving a huge seven-stage turbine, which can handle as much as 2,000,000 cubic feet of air per minute. It has now been in operation for about three months.

The Arnold Story

Did you know that Pan American Airways was formed as a countermeasure to imperialistic Germany? That every plane which bombed Germany or Japan during the last war did so in violation of a War Department directive?

Well we hadn't, but we picked up these, and a hundred other, items of interest from a new book written by General of the Air Force H. H. "Hap" Arnold and entitled "Global Mission."

It was Arnold who was responsible for the formation of Pan American. In 1924, the Germans were operating an airline, named Scadta, between Barranquilla and Bogota, far too close to the Panama Canal to be ignored. Then Arnold, then chief information officer, heard that the airline planned to expand its operations, pushing up not only into Panama, but extending through the Central Americas to Cuba and the United States to carry mail and passengers. Arnold decided to try to block it.

He went to the Postmaster General and asked whether, if Scadta were to request authority to carry mail on those routes, such permission would be granted. The PMG replied that permission would have to be given under the law, unless an American line could perform the same services. Since there

AF's Newest Jet Bomber—First official view of the Air Force's latest jet bomber the Martin XB-51, two of which are on order. The plane is powered by three General Electric J-47 jet engines, two located in the visible nacelles and the third in the rear of the fuselage. Although not officially announced, it is believed that the swept-back wings are capable of varying their angle of attack in flight. Span is about 55 ft. and length about 80 ft. The plane is scheduled for first flight some time this month.

was no such American line, Arnold decided to organize one.

That's how Pan Am came into being. Arnold got in touch with a young ex-naval officer who drew up a prospectus of their proposed air line and found some New York capital to finance the venture. Arnold was supposed to resign his Army commission to take the job of president and general manager of the young airline, but he later decided to stay in the service.

Bombing Directive. Speaking strictly technically, every AAF bomber which flew over enemy territory during the war violated an order. The order resulted from an Air Corps navigation mission.

"To see how good our navigators really were," Arnold tells it, "the GHQ Air Force had sent three B-17's far out to sea to 'intercept' the Italian liner *Rex*. (Maj. Robert) Olds and his wingmen had 'hit' the *Rex* right on the nose, 615 miles out to sea, dropped a message on her deck, and come home with the idea they'd proved something."

It turned out they had—the Navy got to the General Staff and immediately there was issued a directive that all activities of the Army Air Corps would be limited to within 100 miles of the shoreline. "As far as I know," says, Arnold, "that directive has never been rescinded." (Navy publications please copy).

Arnold's book is about half a personal autobiography and half a history of the Air Force—there is little difference, of course, since Arnold's life has been so closely intertwined with that of the Air Force.

The general is at his best in the first third of the book, when he tells of the early years of the flying service in a casual, humorous way as though he were reminiscing with a group of friends on the veranda of his California ranch. The Billy Mitchell story, naturally, runs through most of this portion of the book—and while Arnold adds little detail to this oft-told story, he manages to inject into it a character study of Mitchell (the two were great friends) that somehow makes it a little more interesting than any previous coverage of the famous case we have ever seen.

When he gets into modern history, chiefly the war years, he loses his easy style. The book remains interesting, however. Arnold's war is slightly different from the earlier histories of the subject, for his is a chronology of top level problems and command decisions; names like Roosevelt, Churchill, Stalin and the top military leaders fill the pages of "Global Decision."

The actual fighting war, in Arnold's story, is a remote, passionless thing, a background for his anecdotes and high level character studies. His story of the historic meeting between Roosevelt and Churchill at Placentia Bay in August, 1941, is without doubt the best ever written on it.

Advice. He closes with a few admonitions: arms aid to anti-Communist countries is a good thing, but improper handling can ruin the program. Arnold pleads for some advance planning and thinking to insure that each of the nations concerned get the kind of equipment it would need to fit into a balanced defense program, not just indiscriminate shipments of odd pieces of equipment.

We must also stop "shoeing dead horses," he says, that is, spending millions of dollars maintaining a particular air base which we don't need because closing it would anger a Congressman.

And then he lets go with a blast that will endear him to the hearts of the Marines: we must not continue to operate units because "we have had this unit ever since the Revolution, and tradition is behind it, so we will keep it in being."

Production Spotlight

New Engines for B-36: Convair's controversial B-36 will get a new set of engines. The Air Force now plans to install Pratt & Whitney R-4360-53's in late model B-36's instead of the —41's in the "B" model. The —53 engine is essentially the basic power plant originally designed at the VDT (variable discharge turbine) engine (see Airwork story, page 38), but using a conventional type supercharging system instead of the VDT. Nothing has been said about the —53 officially, but it is believed to have a rating of 4,000 horsepower, an increase of 500 hp per engine over the power available to the B-36B. Pratt & Whitney is putting the engine into production under a $29,-192,000 contract.

More AF Funds? *With the conferees appointed by both Houses of Congress just about ready to start ironing out the differences in their respective versions of the military appropriations bill, President Truman's announcement that an atomic bomb has been exploded in Russia appears to give the House conferees an added weapon to use in their fight for restoration of all or part of the $800.000,000 the Senate cut out of the House-approved Air Force appropriation.*

The chief difference in the House and Senate versions of the bill lies in appropriations for the Air Force. The House approved a total of $3,092,700,000 in cash and contract authority for Air Force plane procurement, which would have permitted the purchase of 2,550 planes; the Senate scaled it down to $2,515,000,000, or 1,668 planes. Under the House version the Air Force would get 41,840,000 pounds of airframe weight, while the Senate verion cuts it down to 27,000,000.

Both versions are the same as regards procurement of naval aircraft, i.e., $1,099,600,000 in cash and contract authority, which will buy 843 planes. Best guess among observers is that the Air Force will get at least part of its cut restored.

Navy Helicopters: Piasecki Helicopter Corp.'s HUP-1, five-place tandem rotor helicopter, has been ordered into production by the Navy, with an original order for seven planes. HUP-1 is a redesignation of the 'copter formerly known as the XHJP-1. Piasecki, already pretty cramped in its Morton, Pa., plant, has leased two of the new hangars at Philadelphia's Southwest Airport to provide the additional production facilities required. The contract also involves an increase in production and engineering personnel.

Canadian Engines in Sabre: *The possibility that the Canadian versions of North American's F-86 Sabre jet fighter may be powered by a Canadian engine rather than the General Electric J-47 in the American model is indicated by the fact that flight tests will be made of a Sabre powered by the A. V. Roe Orenda engine, a large, axial-flow turbo-jet believed to have a thrust rating in the neighborhood of 6,000 lbs. A complete Orenda power plant is now being assembled at Roe's Malton, Ont., plant for shipment to North American Aviation, Inc., where the engine will be ground and flight tested in a North American-built F-86.*

Under the current schedule, the Royal Canadian Air Force will get its first F-86 of Canadian manufacture before the end of 1950. Canadair, Ltd., will build 100 of the jets for the RCAF under a license agreement with North American. Contract price for the 100 planes is $30,211,190.

Trainer Cancelation: A revision of the Air Force's fiscal 1949 procurement program has resulted in a decision to cancel plans for production of the Fairchild T-31 primary-basic trainer. Fairchild had previously won a competition against the Beech Model 45 Mentor (T-34) and the TEMCO TE-1A (T-35). The Air Force had planned to let an initial contract for 100 T-31's at a cost of about $8,000,000. Under present plans none of the three trainers will be purchased in quantity.

—J. J. H.

PEOPLE

ADMINISTRATIVE

Herbert J. Reeves, treasurer of the International Silver Company, Meriden, Conn.; **Brouwer D. McIntyre**, president of the Monroe (Mich.) Auto Equipment Company; and **Arthur F. Kroeger**, a partner of the A. & H. Kroeger Organization, New York City, have been elected directors of Capital Airlines. They replace **R. J. Wilson, George W. Mason** and **Robert F. Black**, resigned.

Charles Stearns, for three years assistant secretary and assistant general counsel of Northwest Airlines, has resigned to join the Los Angeles law firm of Morrow and Trippett.

Austin E. "Cap" Lathrop, Alaska capitalist-philanthropist, has been elected to the board of directors of Pacific Northwest Airlines, Inc.

Douglas Stockdale, former manager of Braniff Airways in Bolivia and former vice president of Aerovias Braniff in Mexico, has been appointed special representative for the company's Latin American Division for the eastern part of the United States, with headquarters in New York.

OPERATIONS-MAINTENANCE

W. E. "Dusty" Rhoades, director of flight test engineering for United Air Lines since January 1 and before that with the Air Transport Association, has been named coordinator of Stratocruiser flight operations for United.

Philip S. Reid, formerly superintendent of stations for Trans-Texas Airways, has been appointed assistant to **Henry E. Erdmann**, vice president of operations.

W. Bruce Hiatt, Jr., formerly with Braniff Airways, has taken Reid's former post.

Lester Bowen is station manager for Continental Air Lines at Salina, Kan., where it inaugurated service September 26. He was formerly assistant station manager at El Paso.

Robert Lockhart, Jr., a 13-year veteran and for the past two years assistant to the superintendent of communications of Pan American Airways' Latin American Division, has been promoted to division communications superintendent. He succeeds **Robert J. Gleason**, who resigned to become vice president of operations for Aeronautical Radio, Inc.

Lockhart

Glenn Hinkle, junior station manager for Pan American Airways at San Juan, Puerto Rico, for the past year, has been appointed station manager at Managua, Nicaragua. He succeeds **William H. Begg**, who after relief duty at Curacao, Netherlands West Indies, will be given a new assignment.

Joins EAL—Herbert C. Dobbs, who resigned recently as vice president-traffic of National Airlines, has been named head of what will eventually be the Latin American Division of Eastern Air Lines. Dobbs was for 17 years with Pan American Airways in various traffic and sales capacities in Latin America before joining National after the war. Eastern is currently operating to Puerto Rico and has a certificate from the U. S. to operate to Mexico City. Early in the summer Eastern applied for a network of routes in the Caribbean and to cities on the north coast of South America.

Iowanna Meredith, a line hostess for Mid-Continent Airlines since 1947, has been advanced to assistant chief hostess, succeeding **Jacquelin Copeland**, resigned.

Matilda Ann Stafford has been appointed assistant supervisor of stewardesses for American Airlines at Memphis, replacing **Mildred Alford**, who was transferred to Dallas in the same capacity.

TRAFFIC & SALES

Sheldon Wells, former city traffic manager for Trans-Texas Airways at San Antonio, has been promoted to district traffic manager at El Paso.

Andrew G. Diddel, formerly traffic and sales manager for Eastern Air Lines in Detroit, has been promoted to assistant to the general sales manager in New York. He joined EAL in 1943 as a passenger service representative in Miami.

Bob Schoen has been promoted from traffic representative of Trans-Texas Airways to city traffic manager in Houston.

J. T. Patterson, former supervisor of passenger and cargo for American Overseas Airlines in Frankfurt, Germany, has been appointed chief air freight agent for American Airlines in Dallas.

MANUFACTURING

W. F. Goulding, vice president in charge of Curtiss-Wright Corporation's Export Sales Division, and **Raymond W. Young**, vice president of engineering of the Wright Aeronautical Corporation, have resigned their positions.

Mark Nevils has resigned as public relations manager of Curtiss-Wright Corporation. **Leslie E. Neville**, recently appointed assistant to senior vice president **Robert L. Earle**, will handle the corporation's information services.

Harvey J. Gunderson, a director of the Reconstruction Finance Corporation for the past four years; **Chester F. Hockley**, president of the Davison Chemical Corporation of Baltimore, and **Daniel A. Evatt**, financial vice president of the Glenn L. Martin Company, have been elected Martin directors.

Warren R. Smith has been promoted to director of public relations and assistant to the president of the Fairchild Engine and Airplane Corporation. He formerly was divisional director of public relations and assistant to the vice president and general manager of the company's Aircraft Division at Hagerstown, Md.

George A. Hatcher, who recently resigned as domestic military sales manager for Douglas Aircraft, has been appointed director of customer relations for the Fairchild Engine and Airplane Corporation.

Willard L. Landers, former works manager of the Aircraft Division of Fairchild Engine and Airplane Corporation, has been appointed assistant general manager, replacing **Kenneth Bowen**, resigned. **Floyd S. Bennett**, former assistant comptroller, has moved up to division comptroller, filling the post vacated when **Arthur F. Flood** became treasurer and comptroller of the entire corporation.

Landers Bennett

Frank W. Caldwell, director of research at United Aircraft Corporation, on September 19 was presented with the John Scott Award for development of the controllable pitch propeller in his former capacity as chief engineer and engineering manager of Hamilton Standard, propeller-making division of United Aircraft.

Solomon Elected President Of California Eastern

Samuel J. Solomon, former president of Atlantic Airlines, unsuccessful applicant in the Middle Atlantic Area Case, has been elected president of California Eastern Airways. The company is an applicant for a certificate in CAB's Transcontinental Coach Service Case. Andre de Saint-Phalle was advanced from president of Cal-Eastern to chairman of the board and continues as chief executive officer of the company.

Solomon was a founder and former president of Northeast Airlines, was president of the Airlines Training Institute during the war, and currently is a director of TACA Airways, Inc., in addition to his California-Eastern position.

R. E. McCaskey was re-elected vice president and general manager in charge of Cal-Eastern's activities on the west coast.

Davis Named Assistant Secretary of Commerce

Thomas W. S. Davis, special assistant to the president of United Air Lines in Washington for the past several years, has been confirmed by the Senate as Assistant Secretary of Commerce. He will fill the vacancy caused by the resignation of John R. Alison last spring. Davis will not have the title of Assistant Secretary for Air but the White House said his assignment will involve chiefly dealings in aviation matters with various government agencies, including the Civil Aeronautics Board and the Post Office Department.

Others in the News

Harlan D. Fowler, inventor of the Fowler flap, has been awarded a John Price Wetherill Medal by the Franklin Institute, Philadelphia, "in recognition of Fowler's many years of effort to solve the problem of variable lift airplane wings."

George Childress, for the past two years chief of the industrial operations section, Office of Aviation Safety, Civil Aeronautics Administration, has been appointed director of the Aviation Extension Division of the Office of Aviation Development. He has been with CAA since 1939.

Col. A. D. Tuttle, medical director for United Air Lines since he retired from the Army in 1937, has been elected president of the Aero Medical Association.

Maj. Gen. Victor E. Bertrandias, whose resignation from Douglas Aircraft Company was announced recently, has been recalled to active duty as an advisor to and Special Assistant to the U. S. Air Force Chief of Staff for Reserve Forces. He also becomes senior AF officer on the Department of Defense Civilian Components Policy Board.

Airline Commentary

By ERIC BRAMLEY

THIS ITEM comes under the head of the neatest trick of the season. Seems that a couple of American Airlines' pilots, Archie Chamberlin and Chick Evans, have a sure-fire plan for keeping their passengers happy. As the passengers are mounting the steps to board the airplane, these gentlemen lean out of their cockpit windows and shoot pictures of them with one of these new-fangled cameras that develops film in a flash. Then shortly after take-off the passengers are presented with pictures of themselves. Probably a lot of airline people are kicking themselves because they didn't think of this first.

•

The credit where credit is due department: The first of September was the first anniversary of domestic air parcel post service, but the Post Office Dept. forgot all about it. But not Tom Bell, TWA's Washington public relations manager. He showed up at the Post Office complete with birthday cake and a pretty stewardess. The stewardess presented the cake to Postmaster General Donaldson, who cut it up and gave everyone a piece. By the merest of coincidences there was a photographer present. TWA stole a march on the other airlines by getting the publicity, and Post Office officials, who called up and told us the story, were happy to have been reminded of the anniversary and were also pleased with the publicity. They also decided that Tom Bell doesn't miss a bet.

•

New words and phrases: We note in TWA's *Skyliner* a new (at least to us) abbreviation. It's VET, which translated means "very experienced traveler" . . . An Hawaiian newspaperman recently traveled over the Northwest Airlines' system in preparing a series of stories. He later wrote Joe Ferris, NWA publicity director, a thank-you note in which he stated that "you apparently have the youngest and most energetic staff of praise agents of any airline." Joe calls attention to the new phrase, "praise agents."

•

During our recent visit to the headquarters of Wisconsin Central Airlines, we were told the story of the town on the WCA system where a proposal was before the town council to install a ceiling light at the airport. This particular town hadn't had air service very long and the city fathers weren't exactly well educated on aviation developments. It was explained that this light was directed upward in order to measure ceilings, following which one of the councilmen said he'd be darned if he was going to vote for a gadget like that. "Why, it would blind all the pilots coming in here," said he. It was only after a great deal more explaining on the value of ceiling lights and assurances that the pilots would be safe that he reluctantly gave in. Sounds like some educational work to be done.

•

We had a gripe the other day from an airline employe (and it isn't the first time we've heard it). He's stationed in the western part of the country and, during vacation, brought his family east by riding passes on other airlines. His gripe was about the way some of the airlines (one major carrier in particular) kick around passholders from other airlines. "My family and I sat around a midwest airport all night, trying to get out on a flight," he said. "I've been in the business long enough to know whether or not an agent is really trying to get us out. And the best I can say about this one airline is that the effort was half-hearted. Sure, I'm riding a pass and I don't expect to be treated like a king, but I like to think they're doing all they can. After all, my company extends them the same privilege. On the other hand, some of the smaller airlines knocked themselves out trying to take care of us." As the guy says, he doesn't expect royal treatment, but he'd like some of the agents to remember that they may have occasion to ride passes through his station. A word to the wise should be sufficient.

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Chicago & Southern Air Lines' people are still scratching their heads about an incident connected with last month's renaming of Paducah-McCracken Airport as Barkley Field in honor of the Vice President. The local Junior Chamber of Commerce chartered a C&S DC-3 and sold scenic flights during the day to Kentucky Lake at $3.50 per head (12 flights at 99.2% load factor). The unusual thing was that one Paducahan, a farmer, was on board eight out of the 12 flights. And he said that the only thing he didn't like about it was that he got to the airport too late to get a seat on the first four trips.

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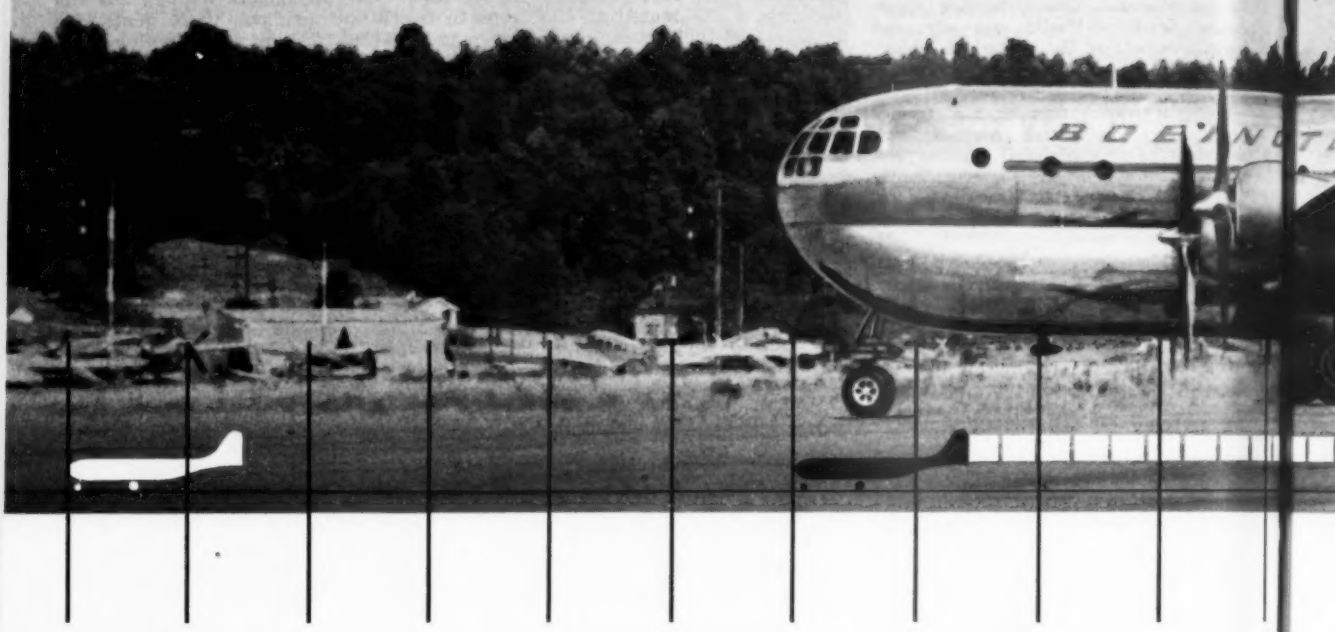

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Year-End Negotiations Due For Mechanics of Six Lines

By William D. Perreault

The time for renegotiating airline mechanic contracts is coming up soon. Among the contracts about due for reconsideration are those of United Air Lines, Trans World Airline, Eastern, American, Pan American and Western Air Lines. These agreements normally terminate on December 31 of each year and notice of renegotiations, if there are to be any, must be filed at least 30 days earlier.

There are few fields in which the basic wages were so low in 1940, made such major gains in the intervening years, and still remain at moderate levels. Airline managements feel that mechanic wages are adequate. The unions point out that wages are moderate compared to existing levels in other skilled trades and in comparison with the cost of living.

Wage History. Present day pay rates for mechanics, as distinguished from sub-supervisory levels in maintenance, average between $1.58 and $1.88 per hour. In many of the lines there are shift differentials for mechanics working on afternoon and night shifts. There are also longevity payments, usually a penny an hour per year of company service.

In a recent arbitration case, Capital Airlines presented the following summary of wage increases among airline mechanics:

	Total 1-1-40 to 10-15-45	Total 10-15-45 to 7-15-48	Total 1-1-40 to 7-15-48
Capital	35c	46.5c	81.5c*
American	26	54	80
C & S	43	50	93
Delta	33	44	77
Eastern	26	47	73
Mid Continent	38	46	84
Northeast	25	42	67
Trans World	27	57	84

*Capital has since raised wages 6c per hour.

Controversy. It should be pointed out that about 20c of the total increase shown here resulted when the work week was cut from 48 to 40 hours in 1946. At that time the airlines raised the hourly wages of mechanics about 20% so that take-home pay remained constant while working hours were reduced about 16%.

The airlines generally consider that this raise in hourly wages was one round of increases and that the next request will be the fourth. The unions have a tendency to ignore this 20c as an actual raise since the take-home pay of the mechanic, his ability to maintain or improve his living standard in the face of rising prices, did not change.

All but one of the airlines have contracts with their maintenance personnel. Delta Air Lines' mechanics are not organized under any of the trade unions. Otherwise, the majority of airlines are included in either the Transport Worker's Union of the CIO, the International Association of Machinists or the United Auto Workers.

With the TWU are American, and Pan American. Capital, Colonial, Eastern, National, Northeast, TWA, and United mechanics are part of the IAM. Braniff, Chicago and Southern, Continental, Mid-Continent and Western Air Lines are organized with the UAW.

ALPA & Mechanics. Periodically, the rumor sweeps through the airlines that the Air Line Pilots Association is about to start organizing mechanics. That rumor is making the rounds once more. Whether or not there is any truth in the rumor, there appears to be a close tie between the two groups that would provide certain mutual benefits.

With the trend in pilot numbers on the downgrade, an alliance with mechanics might provide the new strength which some quarters feel the organization could use. When either group, the mechanics or pilots, fail to observe the picket lines of the other group, the effectiveness of the strike is weakened.

But the question remains: "Will $800-1200 a month pilots walk off their jobs to protect the rights of $250-275 a month mechanics?" If the ALPA is actually considering the organization of mechanics, this will be a strong factor in demands made of the airlines. It would appear to be a poor year in which to start a competitive scramble to see who could get the most money for the mechanics and votes for the union.

Next Round. What the unions will ask of the airlines in the next round has not been disclosed. The general feeling is that wage increases will not play so dominate a part in the coming negotiations as in previous years. Instead, moderate increases along with demands for additional "benefits" are more likely.

Benefits can include more paid holidays, additional sick leave, more vacation, etc. But the unions are expected to be looking for pension plans for mechanics. Any accomplishments in this field in 1950 would be but a start. Pensions in 1950 would have to be through company plans. The unions are more interested in bringing airline mechanics under the Railroad Retirement Act.

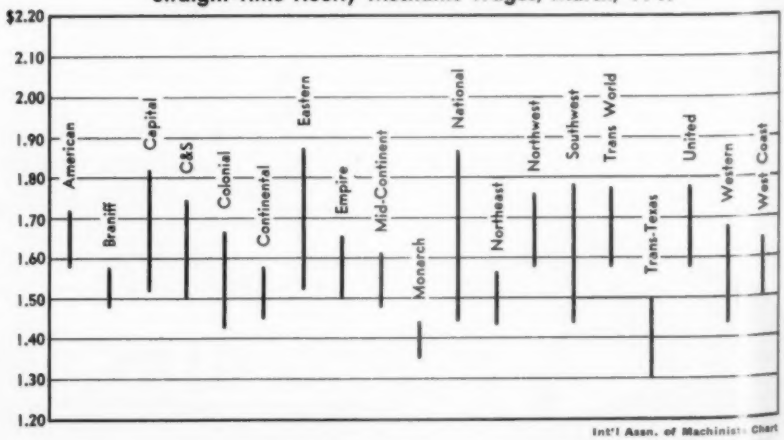
The seasonal fluctuations in maintenance jobs and the shifting of airline centers, as has occurred in the last few years, have made the unions turn with interest to the RR act since it provides protection on an additive basis even though the worker changes employers. It also provides dividends about six times as high as Social Security. This plan, which would require Congressional legislation, calls for contributions equaling 6% of the worker's wage from both the employer and employe.

Return on Investment. What are the airlines getting for their money? Unlike most trades, the airline mechanic's job has taken on entirely new aspects in the past decade. Despite attempts on the part of the airlines to break jobs down to simplest denominators, set up special crews for many types of work and even assign separate crews for different airplane types, the mechanic of today has to be a high caliber craftsman to do his job properly.

That he is accomplishing this end is borne out by the ever improving safety record of the airlines. Not that the mechanic is solely responsible for this record, but almost every mechanic in the airlines performs some daily task which could bring disaster to the airplane if it were improperly handled.

It has been argued that specialization

Straight-Time Hourly Mechanic Wages, March, 1949



in the airlines has reached a point where mechanic assignments are becoming simpler. There are such jobs in some departments, particularly in component overhaul. But in line maintenance activities and in many phases of overhaul, the mechanic must have an ever increasing range of technical knowledge.

Earned Progress. Few mechanics who are with the airlines any period of time fail to progress. Moving into positions as lead mechanics, inspectors and foremen, the mechanic must have extensive knowledge of electrical and electronic systems, high pressure hydraulic systems, structural repair, heating and air conditioning systems, fire control, powerplant operation and trouble shooting, control operation and rigging, etc. These are not simple mechanical tasks. They are sciences that must be mastered prior to advancement.

There are few people, even within the industry, who realize the growing responsibilities that are being heaped upon maintenance personnel. The airlines are doing a good deal in training mechanics through classroom work and by bulletins, manuals and other aids. For this reason many companies feel that the real talent of the airline mechanic is obtained within the airline at airline expense.

These are a few of the reasons why it is difficult to determine what the trends in pay will be. The job is changing at such a pace that any stabilizing in wages may have to await a leveling off in job performance requirements.

L-749A Constellation Gets First ICAO Certification

First aircraft to be certificated for international operation in compliance with the newly effective airworthiness standards of the International Civil Aviation Organization was the first of Lockheed Aircraft Corp.'s Model 749A Constellations having the new high gross weight of 107,000 lbs. The plane was delivered to KLM in September.

The increase from the L-749's gross takeoff weight of 102,000 lbs. to the L-749A's 107,000 lbs. marks the fifth time in five years that a weight increase has been permitted for the Constellation. Initial Constellation takeoff weight was 86,250 lbs.

Under the new weight conditions and using high activity factor propellers, Lockheed engineers report the L-749A will carry 21 to 24% more payload and will require 20% less runway for takeoff.

Fully loaded for a 3,500-mile nonstop flight, the L-749A will takeoff from a 4,52[illegible]t. runway. Formerly 5,050 ft. were required for the 102,000-lb. L-749 under similar conditions.

Capacity payload of the 46-passenger version (standard for the long-range Constellation) is 13,462 lbs.

The first L-749A delivered to KLM was equipped with 15-ft. Curtiss 830 propellers, but Hamilton Standard 2F17 propellers, which have the same activity factor of 120, also may be used.

A 5,000-lb. increase in the landing weight to 89,500 lbs. also has been certificated for the L-749A with a new Bendix brake of increased capacity.

Model Gear—With the principles designed into this model gear, Henry M. Henion, vice president, Airways Engineering Corp., claims that wear on transport and other heavy aircraft tires will be sharply reduced. Each wheel is mounted on an active shaft coupled through a differential gear. Normally the wheels are free to turn independently. By means of a cockpit switch, the pilot is able to lock the differentials so that the wheels rotate when the aircraft is being towed through a sharp maneuver. The forced rotation prevents scuffing and eliminates need for turntables, Henion claims.

NMB Rules NWA Supervisors Entitled to Union Voice

In a precedent-establishing ruling on a petition of the International Association of Machinists, the National Mediation Board held that seven classes of foremen and supervisory employes of Northwest Airlines have the legal right to be represented by a bargaining unit in their relationships with their employers.

Previously, all decisions on who are subordinate officials had been made by the Interstate Commerce Commission, but the NMB asserted in its ruling that it has the right to determine the question where airlines are concerned.

"The argument that this Board should draw a line beyond which self-organization may not extend proceeds on the misconception that this Board, by denying recourse to the machinery of the Act, could thereby prevent persons from exercising their 'fundamental' right to form or join labor organizations," the Board declared, adding that such is "not a fact." It ordered an election in the Northwest case.

Most WNA Military Flights Moved to Ease Congestion

Washington National Airport has been relieved of some of the military traffic that has long contributed to the overcrowding of the field, especially in instrument weather.

In a new agreement signed by Department of Defense and Civil Aeronautics Administration, the military agreed to shift all but its VIP and international flights from National to nearby military installations such as Andrews AF Base, Anacostia Naval Air Station, and Bolling AF Base.

Under terms of the agreement, which is for an indefinite period, the Air Force transferred to CAA title to the Military Air Transport Service passenger and freight terminal buildings and certain other facilities originally constructed for the Air Transport Command and used by MATS for the past 14 months. MATS will retain sufficient space in the two terminal buildings, however, for the servicing of passengers and cargo from such military flights as still have to land or depart there.

The agreement makes increased space available to the commercial airlines for the handling of air freight and will also make possible an increase in the number of international airline flights originating and terminating in Washington. The former MATS passenger terminal, near the north end of the field, includes customs, immigration and quarantine stations.

Silverstein Named Research Chief for NACA Laboratory

Abe Silverstein, 41-year-old scientist who delivered the annual Wright Brothers Lecture before the Institute of the Aeronautical Sciences last December, has been named chief of research at the Lewis Flight Propulsion Laboratory of the National Advisory Committee for Aeronautics.

Silverstein, chief of the wind tunnel and flight research division at Lewis since 1945, fills the vacancy created by the transfer of Addison M. Rothrock to NACA's Washington staff as an assistant director for aeronautical research.

C-W Offers C-46 Training

The airplane division of Curtiss-Wright Corporation is offering a service and technical assistance plan to commercial operators of C-46 Curtiss Commando transport planes.

On-the-spot training of the operators' personnel by qualified field representatives of the corporation in maintenance and operating problems will be a feature of the program. Also, C-W will furnish supplementary information on all technical publications and handbooks and supply data on all engineering changes. More than 50 civilian operators now use C-46's.

UNITED AIR LINES SALUTES A MASTER PLAN FOR THE ELECTRONIC AGE OF FLIGHT

The RTCA

TO most of you, RTCA SC-31 is a new and unfamiliar code in these alphabetical times. Yet RTCA SC-31 is neither a code nor a formula. It stands for Radio Technical Commission for Aeronautics, Special Committee 31—a group of men drawn together from every major activity in aviation, meeting to plan aviation development that fully utilizes electronic aids and other scientific advances. One of their major purposes was to improve the year-'round dependability of air transportation. Each man brought to the others his own ideas of what course that development should take. After months of unstinting and unselfish labor, this distinguished group evolved a master plan for the Electronic Age of Flight. RTCA SC-31 is truly the symbol of a great new era in aviation.

☆Represented in RTCA SC-31

(Radio Technical Commission for Aeronautics—Special Committee 31)

- Department of State
- Treasury Department (U.S. Coast Guard)
- Department of the Air Force
- Department of the Navy
- Civil Aeronautics Administration
- Civil Aeronautics Board
- Air Line Pilots Association
- Federal Communications Commission
- Aircraft Owners and Pilots Association
- Radio Manufacturers Association
- Air Transport Association of America
- Aeronautical Radio, Inc.

SC-31* System

To appreciate what has taken place in commercial aviation under RTCA SC-31, recall the uncertainty of airline departures and arrivals during the winter, as it was a few years ago. Then note the tremendous improvement. One typical large airport gives us this example:

> In the winter months of 1946-47 more than 3800 flights were cancelled at LaGuardia Airport because of traffic congestion resulting from weather conditions. *Last winter, no flights were cancelled due to traffic congestion.*
>
> In the same winter months of 1946-47, only 13 per cent of airline flights operating under instrument flying weather conditions at LaGuardia Airport, arrived on time. *Last winter, 79 per cent of airline flights operated on time in such weather conditions.*

Similar improvement was accomplished at Chicago and other major terminals. In the coming winter, the record of dependability will improve even more.

What is responsible for this outstanding improvement? To a great extent, the answer is a realistic application of present facilities leading to a new system of all-weather navigation and traffic control devised by RTCA SC-31. The system was developed at the direction of the Air Coordinating Committee, in line with the recommendations of the President's Air Policy Commission and the Congressional Aviation Policy Board.

This new airway control system, *first and foremost*, will give America the means to operate the tightest-knit, most secure air defense it has ever had. *In the second place*, it enables commercial airlines to provide air travelers with a standard of on-time dependability never before possible.

Stated in its simplest form, the system uses electronic facilities, in the air and on the ground, to make the operation of military, commercial and private airplanes *dependable under all conditions of weather.* It is accomplished by new Airway Traffic Control procedures and by electronic facilities such as Instrument Landing System, Precision Beam Radar, Radar Surveillance and other well-tried airway and airport aids.

The impressive cut in schedule delays and cancellations is due to great improvement in air navigation control and more efficient handling of air traffic which the system has already made possible.

Even brighter than what has already been accomplished are the plans for expanding present electronic facilities and developing new devices to keep pace with the future growth in air transportation.

The work of RTCA SC-31 is a splendid example of what really can be done for the national welfare by men who harmonize their differences in the common good—making America stronger, more useful in the family of free nations.

W. A. Patterson

PRESIDENT, UNITED AIR LINES

Published as a message of interest to air travelers by

UNITED AIR LINES

P & W Developing Compound Engines Rated at 5500 hp

The much-discussed Pratt & Whitney R-4360-VDT (variable discharge turbine) compound engine is now considered obsolete, a Pratt and Whitney engineer stated last week, but P & W is now in the process of developing a new compound engine series which may offer power ratings as high as 5500 horsepower and "rather spectacular" range capabilities. The new series will employ the basic principles of the VDT engine, but with design improvements making possible a more powerful and more efficient engine.

The original version of the VDT was rated at 4,000 horsepower and in addition had several hundred pounds of thrust. The added power was obtained by harnessing the exhaust gases in two ways: by recapturing them and channeling them back into the engine through an aftercooler as a power feed-back and as a miniature jet engine, producing the jet thrust by directing the exhaust gases through a turbine.

The exhaust nozzle at the rear was adjustable, permitting the ejection of the gases at the most efficient discharge speed (hence the name, variable discharge turbine). The mechanism which utilized the exhaust gases was a General Electric CHM-2 two-stage supercharger.

This information was included in a discussion on new power plant developments by W. W. Doolittle, assistant supervisor of the Pratt and Whitney service school, during an engine symposium jointly sponsored by P & W and Airwork Corp., overhaul and maintenance company, at Airwork's Millville, N. J., base. The symposium was part of a P & W program to provide its distributors with a more thorough understanding of its products.

Refinements. The new series will operate along the same lines but will have a number of design refinements. In addition, Doolittle said, both General Electric and Westinghouse have developed new supercharging units which promise increased power and efficiency from the compounding system. The refinements in the new series will permit the engines to operate normally at manifold pressures above 70 inches of mercury and will allow continuous operation at altitudes above 50,000 ft., he added.

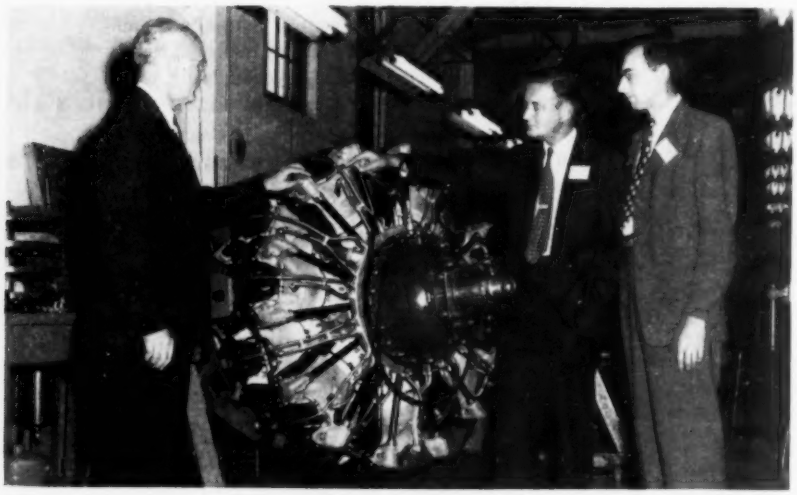
In addition to Doolittle's discussion, which was entitled "Developing Tomorrow's Aircraft Engines," the program consisted of a second lecture by Doolittle, "Manufacturing the Pratt & Whitney Wasp Major Engine" and a discussion on "Operation Problems and Use of the Power Calculator," a computer which gives the optimum power settings for a given altitude and desired horsepower, delivered by A. L. MacClain, P & W's chief installations liaison engineer. MacClain also conducted an open forum.

Francis L. Hine, president and treasurer of Airwork Corp., served as chairman of the meeting, which was attended by about 100 representatives of operators and suppliers.

Overhauling Continentals. An Airwork official disclosed that the overhaul company has just started handling overhaul and maintenance of Continental E-185 engines, which power the Beech Bonanza and the Ryan Navion. This is Airwork's first light engine, previous work having been confined to heavier horsepower Pratt & Whitney engines, but Airwork is confident that there is a real market in light engine overhaul. The only place now handling the E-185 work is the Continental plant at Muskegon, Mich., and Airwork believes it can overhaul the personal plane power plants at a lower cost.

Airwork, located on the site of the war-time Millville Army Air Base, has two main overhaul shops, each with 10,000 ft. of floor space, a 2,500 square foot accessory overhaul shop and a test shop, in addition to several warehouses. The company, which has been in business since Nov., 1946, now employs about 90 maintenance technicians and is turning out about 30 engines a month, chiefly P & W-R-1830's and R-2000's.

Among the commercial operators, Airwork's chief customers are Transcontinental & Western Air, Colonial Airlines, Trans-Caribbean Airlines and All-American Airways. Airwork has also handled jobs for the Chinese, Greek and Pakistan governments, and Icelandic Airways. The company's accessory overhaul shop is now engaged in reconditioning more than 600 carburetors for the Navy.



Engine Symposium— Officials of Pratt & Whitney Aircraft Division of United Aircraft Corp. and Airwork Corp., overhaul and maintenance company, inspect a newly-overhauled P & W engine in Airwork's Millville, N. J., shop. Left to right, they are: A. L. MacClain, chief installations liaison engineer for P & W; J. V. Thompson, executive vice president of Airwork; and W. W. Doolittle, assistant supervisor of P & W's service school. MacClain and Doolittle conducted an engine symposium at Airwork's base.

Modified Convair Liner Undergoing CAA Tests

A modified Convair Liner featuring all recent improvements in that ship is now undergoing CAA certification tests in San Diego. Among the improvements that are incorporated are a revised landing gear system, improved instrument panel and electrical relocations. Although generally meeting the same specification as American Airlines' Convairs, the interior has been revised to have three seats on each side aft of the entrance facing each other so arm rests can be removed to convert the seats into lounges or into two berths. Two seats have also been reserved on each side of the aisle to make the installation of two card tables possible.

The lounge and berths were installed to show potential customers the possibilities of this ship in executive use as well as an airline transport. The ship has inherited the number "927" which was the number of Convair's old B-24 transport.

New Titles: To give its overseas station managers more prestige in their dealings with local governments and officials, Trans World Airline has given all such managers, including the manager at Gander, the new title of district operations manager.

Champion Conference Highly Successful

Champion Spark Plug Co. held its 1949 aircraft spark plug and ignition conference at the Hotel Secor in Toledo, O., Sept. 6-8, with about 100 technical representatives of suppliers, engine manufacturers, oil companies, etc., as well as all of the American carriers and Philippine Air Lines, Sabena and the Canadian carriers in attendance.

The purpose of the conference was to discuss new methods of eliminating the greatest single mechanical cause of airline delay—ignition trouble. An example of the magnitude of ignition difficulties was contained in a report from American Airlines to the effect that ignition trouble costs that airline more than $1,000,000 a year in delays, extra labor, etc. According to the American representative, $8,500 a year is expended on ignition work on a single Convair-Liner, while a DC-4 costs $6,-700.

The conference was conducted on a "knowledge pool" basis. Four chairmen ,or moderators (A. W. Kuhn, Pan American; Paul Kovac, American; R. L. Anderson, Chicago & Southern; and R. E. McDonald of Northwest) sat at a head table and presented questions to the rest of the assembly, with volunteers who had had experience with the subject answering.

The questions were taken from a prepared list of 96 which had been submitted by the operators before the meeting. Fields covered in the question and answer period included spark plug design and construction, lead fouling, other spark plug fouling, associated difficulties, general spark plug performance, spark plug maintenance and testing methods and equipment, ignition systems, magnetos, ignition analyzers and miscellaneous subjects. There was considerable discussion of the merits of the Scintilla low-tension ignition system and the General Electric low-tension high-frequency system as a means of reducing delays caused by ignition troubles.

Fouling Problems. In addition to design characteristics of spark plugs, considerable attention was given to engine operating procedures as a cause of fouling.

Several airline representatives mentioned that they had encountered plug fouling in conjunction with the use of "flyaway" oils. W. V. Hanley of Standard Oil of California reported that his company has discovered the sodium content of these rust-prevention oils to be the agent responsible for such fouling. Pan American Airways mentioned that their standard practice has been to run in a new engine three times with a complete oil drain after each running before the engine is used in flight. This has tended to reduce oil fouling.

One of the highlights of the conference was the opening discussion by Champion's chief engineer, Howard Vogel, who covered the general features of spark plug design, materials and construction and told along what lines Champion is working to improve the efficiency and durability of its products.

After the two-day question and answer session in Toledo, the conferees spent the final day of the conference touring Champion's two plants—the manufacturing plant at Toledo and the ceramic plant at Detroit. Champion is turning out 500,000 automotive and about 10,000 aircraft plugs daily in the Toledo plant. The aircraft plugs are manufactured in facilities completely separate from the automotive plug plant.

CHAMPION SPARK PLUG COMPANY'S recent three-day conference in Toledo attracted 100 industry representatives to discuss new methods of eliminating ignition trouble as a source of mechanical delay. The meeting was conducted on a question and answer basis, with moderators at the head table presenting the problems to the rest of the assembly, as shown here.

TO PILOTS
OF TWO-PILOT AIRCRAFT,
AND AIRCRAFT RADIO
SYSTEM ENGINEERS
NEW FREEDOM OF CONTROL
LESS PILOT FATIGUE
with the Type F-11 Isolation Amplifier
CAATC No. 1R4-1
The new A.R.C. Isolation Amplifier performs two important radio control functions that have long presented problems. (1) Each pilot has independent selection of up to ten audio input channels in any combination—without cross-cockpit interference. Radio functions may be delegated so that each pilot works at peak efficiency in complex navigational and communication situations. (2) It operates individual cockpit speakers, with earphones instantly available if desired. Since the CAA no longer requires wearing of headphones when cockpit speakers are installed, the A.R.C. Isolation Amplifier relieves pilots of considerable discomfort and fatigue—particularly in hot weather and on long flights.
No cross-cockpit interference.
Selection of up to 10 channels for each pilot.
Earphones instantly available if desired.
Individual speaker operation for pilot and co-pilot.
Weight: 8 lbs. CAA Type-Certificated. Immediate delivery in 14 or 28 volt dc models. Complete technical details on request.
ARC
Aircraft Radio Corporation
BOONTON, NEW JERSEY
DEPENDABLE ELECTRONIC EQUIPMENT SINCE 1928

The Majestic Constellation

The newest member of the Lockheed Constellation family is the Union of South Africa. This government recently purchased a fleet of these 320-mile-an-hour transports for the South African Airways. Now, four members of the great Commonwealth of Nations fly the majestic Constellation. Australia is represented by Qantas Empire Airways, India by Air India International and the United Kingdom by the British Overseas Airways Corp., all flying the Constellation. Eight other major world airlines also fly, and many have reordered, this famous *tried and proven* airliner, still the world's most reordered four-engined transport.

LOOK TO LOCKHEED FOR LEADERSHIP

Lockheed Constellation

COPR. 1949, LOCKHEED AIRCRAFT CORPORATION, BURBANK, CALIF.

Military Air Transport Service Reports Operating Costs

The following table of operating costs of MATS airplanes is contained in MATS' report for the fiscal year ended June 30, 1949. Limited numbers of copies are available from AMERICAN AVIATION.

Cost Air Transport Functions

Direct Cost		Support Cost	
Crews	$ 5,625,477	Other Base Cost	$32,145,727
Av. Fuel & Oil	10,526,097	Administration & Overhead	6,904,860
Traffic	3,844,472		
Maintenance	11,644,310	**Total Support**	**$39,050,587**
Major Overhaul	11,836,108	**Total Operating Cost**	**82,527,051**
Total Direct	**$43,476,464**		

Hourly Transport Operating Costs

(Weighted Average)

	Douglas C-47	Douglas C-54	Douglas C-74	Boeing YC-97	Lockheed C-121
Direct Cost					
Crew	$ 11.51	$ 22.55	$ 56.97	$104.75	$ 52.36
Av. Fuel & Oil	20.88	45.10	92.52	98.29	77.86
Traffic	8.40	16.60	24.51	38.27	22.52
Maintenance	25.72	51.02	71.95	152.29	32.28
Major Overhaul	16.64	54.71	125.59	89.67	79.67
Total Direct	**$ 83.15**	**$189.98**	**$371.54**	**$483.27**	**$264.69**
Support Cost					
Other Base Cost	$ 65.42	$132.80	$386.99	$287.27	$195.62
Admin. & Overhead	14.07	28.22	84.17	70.07	46.44
Total Support	**$ 79.49**	**$161.02**	**$471.16**	**$357.34**	**$242.06**
Total Cost Per Flying Hr.	**$162.64**	**$351.00**	**$842.70**	**$840.61**	**$506.75**

Cost Air Transport Functions By Units

Scheduled & Non Scheduled Transport Operations

	Cost Per Transport Mile	Cost Per Cargo Ton Mile Utilized	Cost Per Cargo Ton Mile Generated
Douglas C-47 Type Aircraft	$1.1823	$ .8545	$ .5118
Douglas C-54 Type Aircraft	2.0375	.5323	.3983
Douglas C-74 Type Aircraft	3.8157	.2890	.2490
Boeing YC-97 Type Aircraft	4.3951	.7239	.6739
Lockheed C-121 Type Aircraft	2.2102	.4833	.4303

Plane News

Pan American Airways has announced acquisition of a 36% interest in Middle East Airlines, the Lebanese airline, in exchange for **three DC-3's**, other materials and equipment.

British Overseas Airways Corp. on September 30 withdrew its **Liberators** from Montreal-London service. The planes, which had been on the route for the past eight years, were originally responsible for return aircraft ferry service and have been used since the war by BOAC as freighters and for crew training.

Eastern Air Lines has completed the conversion of one of its **DC-3's** to incorporate integral loading steps in the main cabin door, larger cargo doors and relocated buffet. The changes mean a weight increase of 69 pounds but are expected to cut ground handling time from 8 to 2 or 3 minutes when refuelling is not required. All EAL DC-3's are scheduled for this modification within the next 12 months.

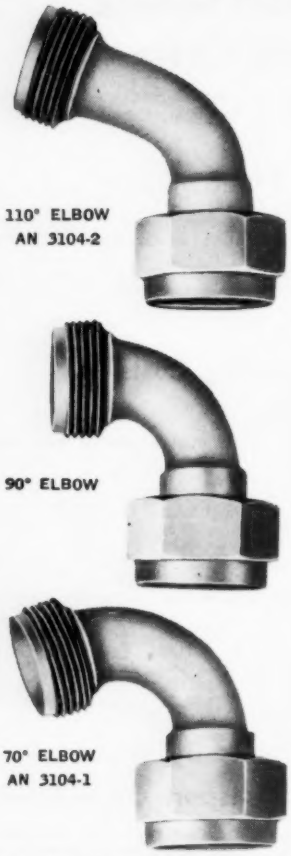
Flying Tigers Buy Planes

The Flying Tiger Line, through purchase or lease, has acquired six additional all-cargo planes which cost about $330,000 and boosted the line's freight-carrying capacity by 75,000 lbs. or more than 50%. The new aircraft, five C-46's and one C-54, were to be put into service about October 1 on the Tiger Line's routes between Los Angeles-San Francisco and New York and New England, via the industrial midwest.

Operationally, the C-54 was to be used on a "hot shot" transcontinental schedule involving few stops and the carriage of heavy loads of long-distance freight. The smaller twin-engined ships were to augment the main transcontinental schedules, serving additional cities and increasing service frequencies at such points.

The carrier's fleet now totals 15 aircraft, including seven C-54's, five C-46's and three C-47's.

SPARK PLUG ELBOWS



Spark plug elbows manufactured by the Electrical and Mechanical Design Corporation are made to meet the rigid specifications of the military services.

We also design and manufacture elbows to meet special applications. We are currently manufacturing elbows made of brass, steel and stainless steel of various sizes.

Our representative in your territory will be pleased to call and give you all detailed information regarding our products.

ELECTRICAL AND MECHANICAL DESIGN CORPORATION

FACTORY
Box 808-A, R.F.D. 1
Rahway, New Jersey
Phone: 7-3381

Detroit Office
8-247 General Motors Bldg.
Detroit 2, Michigan
Phone: Trinity 1-9260

Washington, D. C. Office
1346 Connecticut Ave.
Washington 6, D. C.
Phone: Hudson 7313

Extra Section

By William D. Perreault

ARMSTRONG SIDDELEY, a British engine manufacturer, is flight testing a modified DC-3 equipped with two Mamba turbo-prop engines. These engines are axial flow turbines rated at 1425 hp. plus about 300 lbs. thrust. This is a higher rating than has been in use with the Mamba engine. Use of the Mamba, which has accumulated some 8,000 hours development running, would permit the DC-3's (Dakotas) to meet ICAO requirements and this makes the aircraft competitive with the Super DC-3, although the latter modification also increases cabin capacity and provides for other changes. Maximum range of the Mamba-powered DC-3 is about 750 miles. Another turbo-prop-powered DC-3 conversion using Rolls-Royce Dart engines, as used on the Viscount but rated at about 1400 hp., is also scheduled for flight testing in the immediate future. A third turbo-prop, the Napier Naiad is also under consideration.

•

de Havilland is operating an interesting engine overhaul plan for operators of their engines such as used in the Rapide and Dove. For a flat sum, the manufacturer replaces the used engine with a newly overhauled engine. For Gypsy engines, as used in the Dove, the price is about 600 pounds, whatever that is in current day currency prices. Until recently it was about $2400. This price includes the complete powerplant built up to the operator's specification and a new engine guarantee.

•

One of the most amazing items to be noted in an aircraft factory is at de Havilland's plant where the Redux metal to metal bonding is in use. This process of joining metals is used extensively in the Comet in place of riveting. In one application to the wing of a fighter aircraft made of plywood and metal, the spar is of wood with metal spar flanges "glued" to the main member. In this particular wing there are all types of combinations with metal to metal, metal to wood and wood to wood combinations.

•

The Vickers Viking, in service with British European Airways, uses liquid deicing for the wing instead of deicer boots or thermally heated wing. The anti-icing fluid is introduced onto the wing at the leading edge through porous metal strips which lets it pass over the critical areas. BEA claims that this method leaves the wing in quite a mess since the fluid has some body and tends to collect dirt.

•

Most British transports use pneumatic rather than hydraulic brakes and these are generally controlled by hand grips, similar to those used on English bicycles, attached to the control wheel in the cockpit. In recent years there has been an increasing amount of discussion over the relative merits of hand operated vs. pedal operated brakes. As a result the Vickers Viscount, the turbo-prop transport, will have provisions for brake application either by hand or foot.

•

In order to insure maximum time intervals between overhauls of accessories, British European Airways has made arrangements with the manufacturers of Smiths autopilot, and other manufacturers, to pay for overhauls on a scale which reflects greater pay for longer service life. The scale is arranged to provide the overhaul agency with an incentive to increase unit life and thus cut down service troubles. A similar arrangement is being worked out for the Rolls-Royce Dart engines which will power the Viscount.

•

In the Percival Prince, an 8-10 passenger feeder transport, the emergency exits are located in the ceiling. There are two of these exits, one at each end of the cabin but it would appear that this is a clumsy arrangement. Only by stepping on cabin chairs would the exits be accessible and perhaps not then in the case of small people. There is some discussion of relocating the exits on future models.

Among the Suppliers

Texas Engineering and Manufacturing Co.'s model 72-000 type C-1 aircraft position light and recognition flasher has been approved by the Air Force. The unit is a combination two-circuit position light and code flasher conforming to USAF spec. 32573A.

Goodyear Aircraft Corp. has designed and built a centrifugal machine known as the Rotoformer used for shaping plastic canopies used for Air Force and Navy aircraft. Shaping of canopies is accomplished by spinning at high speed sheets of Plexiglas that have been heated to a soft, pliant state and causing them to assume their final shape by centrifugal force. Importance of the process lies in the optically clear canopies not otherwise available in these shapes.

General Electric Co. has appointed **R. E. Burroughs,** former assistant to the manager of engineering of the Aircraft Gas Turbine Division, as manager of engineering for the division. He replaces **H. D. Kelsey,** who has been appointed administrative assistant to the division manager.

Esso Export Corp. has been awarded a contract with the Armed Services which provides for their handling all refueling and relubing of U. S. Air Force and other governmental aircraft at 72 locations in Europe, South and Central America, Africa, Canada, Iceland, Bermuda and the Caribbean area. The contract will be handled by the marketers affiliated with Esso Export ... **Lindeteves, Inc.** of New York has been appointed sole representative of Air Market Associates of Dallas, Tex., manufacturers of the Fly-Fone, the 2¼ ounce headphone for aircraft pilots.

TECHNICAL LITERATURE

Radar Tests: CAA has published Technical Development Report 92 titled "Performance of S-Band and L-Band Surveillance Radars During Rain and Cloud Conditions." The 8-page booklet describes the results of comparison tests on the performance of 3000 Mc and 1300 Mc radar equipment used to detect the presence of aircraft flying through rain or various cloud formations.

Welding Hose: The B. F. Goodrich Co., Akron, O., has published a new catalog section covering its line of welding hose. The section contains illustrations and gives data on the B. F. Goodrich Oxy-Acetyline and Duo-Weld hose as well as describing their construction. Copies are available on request to the company.

Pressure Gages: W. C. Dillon & Co., 5410 West Harrison St., Chicago 44, Ill., is circulating, on request, a 4-page illustrated brochure describing interesting and useful applications of their pressure gage series. The brochure contains prices, engineering data, dimensions, and photographs of the units in use. The Dillon gage measures mechanical pressure—not fluid pressure.

Battery Charger: The Electric Products Co., 1925 Clarkson Rd., Cleveland 12, O., has copies of Bulletin 235 available for industry circulation. This bulletin describes a newly designed, four-circuit battery charger for servicing motorized hand-lift trucks.

Flight Calibration: CAA is now circulating Technical Development Report 94 entitled "VOR Flight Calibration with C-45 Aircraft." This report deals with the problem encountered in the Beechcraft C-45 in carrying out a precision measurement technique developed for a specific phase of the omnirange flight testing program. In making flight calibration tests of the VHF omniranges in the C-45 and Douglas C-47 it has been proved that there are differences in results caused by flight equipment variations.

Fueling Systems: Bowser, Inc., Fort Wayne, Ind., has published a 31-page illustrated catalog covering all types of fuel handling and control equipment manufactured and sold by that company. Included are fueling systems of all types, pumps, connectors, pumping systems, valves, water separators, gauges, hose, meters, etc.

Paint Remover: The Office of Technical Services of the U. S. Department of Commerce has released a 61-page report titled "Development and Evaluation of Paint Remover, PB 97658." It sells for $1.75. The report describes a successful high-speed method of paint removal which, according to the report, can accomplish satisfactory removal of the paint from a C-47 aircraft within half a day. The remover is sprayed on and the job is completed with a high pressure water wash. Orders should be addressed to the office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. with check or money order payable to the Treasurer of the United States.

Metal Working Costs: The Hydraulic Mfg. Co., Mount Gilead, O., has published a 20-page illustrated brochure titled "Case Studies in the Reduction of Metal Working Costs." The booklet describes 17 case studies made in metal working plants showing applications of hydraulic equipment in a wide variety of industries for lowering costs.

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WHAT'S DOING

Every working day at Pratt & Whitney Aircraft nearly 50,000 gallons of gasoline are consumed.

That's one way of saying that we do a lot of engine testing. But it doesn't begin to tell the complete story of Pratt & Whitney's test program. That program began in 1925, when we built our first Wasp engine. It has continued and expanded ever since. Twenty-four hours a day, six days a week (and often seven), scores of tests are being conducted on complete engines or component parts. And every test contributes something toward giving our customers better, more powerful, more dependable engines.

We believe that today Pratt & Whitney Aircraft has the finest engine test facilities in the world. These include such items as a multi-million dollar turbine test laboratory (devoted exclusively to testing turbine engine parts), more than a hundred large test houses for running completed engines, literally scores of smaller units for testing parts and accessories, special refrigeration and altitude laboratories, and our own fleet of flight test airplanes.

With these facilities in constant use, our current test program at Pratt & Whitney Aircraft is the largest in our history. Some idea of its scope can be gained from the brief outline on the next page.

Test facilities at Pratt & Whitney Aircraft include more than 200 installations, ranging from a simple test bench to full-scale test houses and a turbine test laboratory. They represent an investment of more than 20 million dollars.

Test personnel at Pratt & Whitney includes more than 1,000 employees — engineers, technicians, pilots, mechanics, clerks and many others. In a year they devote more than 2,000,000 man-hours to our test programs.

at Pratt & Whitney Aircraft?

COMPONENT TESTING

Testing of a new type of engine begins before the first model is assembled. This is "component testing" in which major parts such as cylinders, superchargers, compressors, turbines, burners and others are individually tested to see how they will perform in the finished engine. Then, when the parts are assembled, full-scale testing is less costly and less time-consuming, because many of the "bugs" have already been eliminated. Even after the engine is in regular production, component testing continues to be a mainstay of the development program. Whenever a new part is designed, whenever higher performance is sought, whenever operating troubles develop in service, a series of component tests help to solve the problems. In an average week, well over 100 tests are being conducted on various parts of Pratt & Whitney engines.

COMPLETE ENGINE TESTING

When the first experimental engine of a new type is assembled, a program of full-scale testing is begun to see how well the thousands of individual parts function as a unit. Then the engine must pass the gruelling 150-hour government type test, to be certificated. Here again this is only the beginning, and there is a continuous program of full-scale testing to improve the performance of the power plant under every possible operating condition. So extensive is this program that a battery of 35 full-size test houses are in almost constant use testing experimental reciprocating and turbine engines. Just as an example, nearly 50,000 hours of full-scale experimental testing have been done on the R-4360 Wasp Major type since the first engine was assembled. This does not include many additional thousands of hours of component testing and tens of thousands of hours of final testing of production engines.

FLIGHT TESTING

To supplement the component testing and full-scale testing, we carry on an extensive program of flight testing. We have our own airport, our own experimental hangar, a fleet of half a dozen flight test airplanes, and a flight test staff of pilots, engineers and technicians. Day after day this group puts our engines through the acid test of performance in actual flight.

SPECIAL TESTING

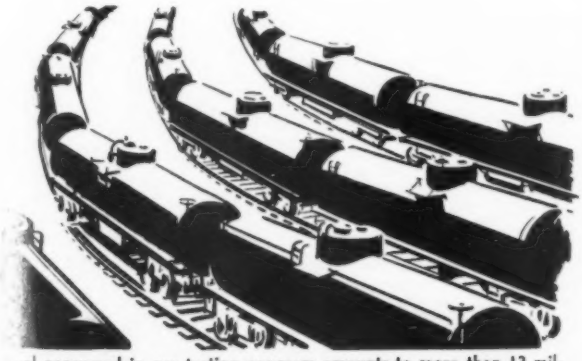
Still another phase of testing arises frequently. This special and somewhat-out-of-the-ordinary type of work is that which our engineers carry on outside our plants. To study icing conditions, several engineers will run tests during a bitter winter atop Mt. Washington in New Hampshire. Others may spend several months in one of our customer's plants working with their engineers on some special test. Still others may find themselves at some remote military base running special tests to lick a particular problem that has arisen there. All these tests help make our engines perform better under the unusual conditions often encountered in actual service.

PRODUCTION TESTING

All the testing referred to above relates primarily to the experimental development of new engine types. But even after they have passed their 150-hour type tests and gone into quantity production, they are subjected to further testing. Every reciprocating engine that rolls off the final assembly line goes through two basic tests. First is the so-called green test of about 5 hours to make sure that it is functioning properly. Then it is completely disassembled and visually inspected for indications of unusual wear or incipient troubles. Following this, it is reassembled and run on the test stand for another 3 or 4 hours to see that it measures up to performance guarantees before being shipped to the customer. Production models of our new turbine engines go through a similar test program. All told some 65 full-size test houses are kept busy on these production tests.

* * * *

Summed up, Pratt & Whitney's test program involves heavy expenditures of time, money and effort. But it is giving our customers better, more powerful, more "Dependable Engines".



...el consumed in our testing program amounts to more than 13 mil... gallons a year. This is the equivalent of 1,450 average tank cars ... more than $2,500,000 worth of gasoline. For cooling purposes, ...5,000 gallons of water per minute will go through the turbine ...t lab — six times the consumption of a city of 250,000 people.

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THROUGH PLANE SERVICE

Between the SOUTH and *California*

DELTA-AMERICAN interchange now in effect. Passengers remain on same plane for entire trip. Crews change at Dallas. New schedules, new convenience, new speed on a new Southern transcontinental route.

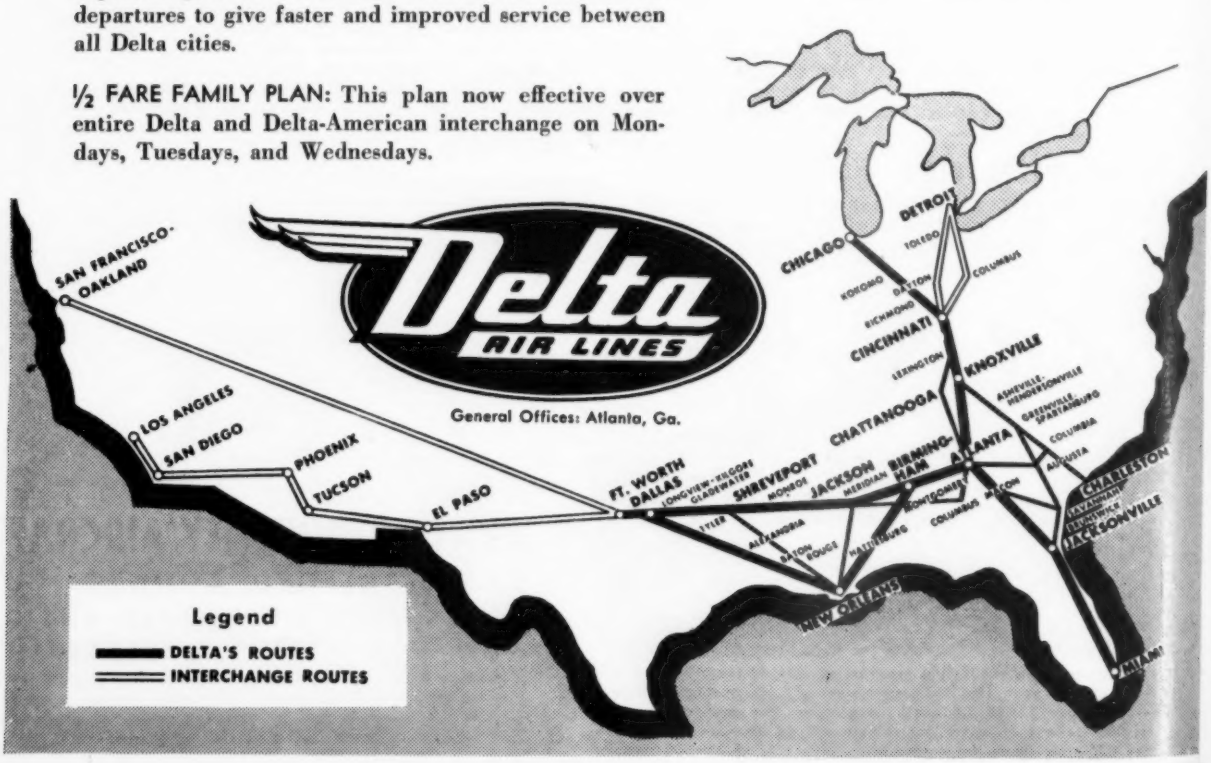
NEW DOVETAIL FLIGHT SCHEDULES: DC-6 and DC-4 express flights are coordinated with DC-3 arrivals and departures to give faster and improved service between all Delta cities.

½ FARE FAMILY PLAN: This plan now effective over entire Delta and Delta-American interchange on Mondays, Tuesdays, and Wednesdays.

NO CHANGE OF PLANES

Luxurious DC-6's

ALL THE WAY



Safety Spectacle

United States Safety Service Co., 1215 McGee St., Kansas City 6, Mo., has announced a new lightweight safety spectacle which features a one-piece lens and detachable temples. Lens is made from "Optilite," a new optical safety plastic which meets strict government specifications for impact and piercing resistance. Marketed under the trade name "Saf-I-Spec," the spectacle is available in crystal clear or anti-glare green and can be adjusted to wear over personal glasses.

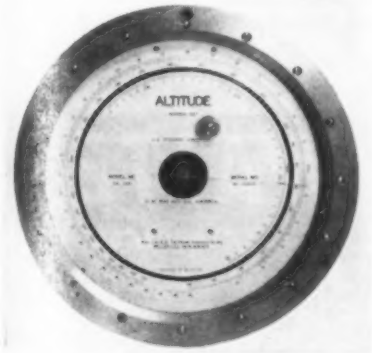
The detachable permanent temples allow adjustment on the lens for the most comfortable position and permit replacement of the lens. The "Saf-I-Spec" has an integral molded sweat-bar and a design which gives unusual rigidity and still prevents it from getting out of alignment.

Propeller Balancer

Baker Manufacturing Co., Evansville, Wisc., is marketing an apparatus known as an Averaging Protractor which indicates the best angle setting of a blade in the hub assembly. This is accomplished by automatic integration in a precision computing mechanism of measurements based on a large number of points on the blade surface. For use with all size of propeller blades either in manufacturing or maintenance functions.

Altimeter Standard

Wallace & Tiernan Products, Inc., 1 Main St., Belleville 9, N. J., has developed a precision aneroid indicator to improve the procedure for calibrating



and testing aircraft altimeters. Range of the instrument is minus 1000 to 30,000 ft. altitude with 10 ft. graduations in the low altitude range. Although the unit has a dial of only 8½ in. diameter, the scale length is 45 in. Sensitivity and accuracy are 1/100 and 1/10 of 1% respectively and the instrument is temperature compensated. It is claimed to be superior to a liquid column because it is portable, has a longer scale, has better readability, and eliminates hysteresis from the test procedure.

Steam Cleaner

Kelite Products, Inc., Box 2917, Terminal Annex, Los Angeles 54, Calif., is marketing the new model Q steam cleaner listing at $398 complete. Measuring 44 in. wide, 24 in. deep and 45 in. high, the 110 gallon solution vaporized per hour is achieved by simplification and rearrangement of all elements. Features include automatic

type pump, all-steel welded construction, automatic fuel regulator, automatic safety shut-off, high velocity nozzle and serated gun grips. The model Q is a completely enclosed cabinet type requiring no special skills to operate. The stationary model weighs 465 lbs. Portable models are available at higher prices.

Air Flow Instrument

The Hastings Instrument Co., Inc., Box 1275, Hampton, Va., has designed a precision air meter for measuring air velocities in the range of 0 to 400, and 400 to 6000 fpm. The Precision Air Meter will measure air velocities as low as 5 fpm. Operating on a combination of hot wire and thermopile principles, the new instrument can be used to measure air velocities in ducts, flow in air and gas lines, surveys of heating and air conditioning systems, etc. It can be adapted to electrical recording instruments for supplying remote indications and operating a standard strip or circular chart recorder. Operates on 110 volts AC power and is complete with voltage regulated supply.

Inquiries about equipment on this page may be sent either to AMERICAN AVIATION or direct to the manufacturer.

Readers looking for sources of special equipment are invited to write to AMERICAN AVIATION's equipment editor. Every effort will be made to provide information on manufacturers and suppliers who are in a position to furnish or develop needed airborne or ground equipment.

Magnetic Thermometer

W. C. Dillon & Co., Inc., 5410 W. Harrison St., Chicago 44, Ill., has designed and is manufacturing a flat stem magnetic thermometer for use in measuring temperatures in air ducts, exhaust ports, and for applications on large flat areas. The flat area stem gathers and retains heat from the surface to which the magnetic thermometer is held without special fittings. Dial sizes range from 1 to 5 in. in diameter and stem lengths from 3 in. up to 42 in. Available in either F. or C. scales

Cleaning Machine

The L & R Mfg. Co., Arlington, N. J., has introduced a completely automatic small parts cleaning machine listing at $249.50. Using a 12 minute cycle, the L & R automatic cleaner routes the items through the cleaner in the first jar, through the rinses in the second and third jars, and into the drying chamber. Hydraulic and mechanical

operation is used. Especially useful for cleaning small instruments, gages, clocks, ball-bearings, electronic parts, etc.

Shielded Welder

Hobart Brothers Co., Hobart Square, Troy, O., has introduced the model TIH-200-S a-c welder for inert gas welding. Having supplementary low heat control, the new model is equipped so that it can be used either as an ordinary transformer-type welder or, with special features switched on, for inert-gas shielded welding.

Low heat control is obtained through use of a secondary reactor built in and controlled by a hand wheel located on the side of the case. Effective welding current as low as 7 amperes can be obtained.

AVIATION'S BIGGEST WINTER PROBLEM

is not in the Air – but on the **Ground!**

- ***How to keep runways clean and safe for landings and takeoffs?***
- ***How to reduce losses due to grounded planes?***
- ***How to make flying more dependable winter transportation?***

The Solution: *WALTER SNOW FIGHTERS*

• 240 hp. Walter Snow Fighter equipped with One-way Front Plow, Right Speed Wing, Center Scraper Blade and 10-ton capacity Sand and Chemical Spreader body. Extremely valuable unit for high speed snow removal and ice control.

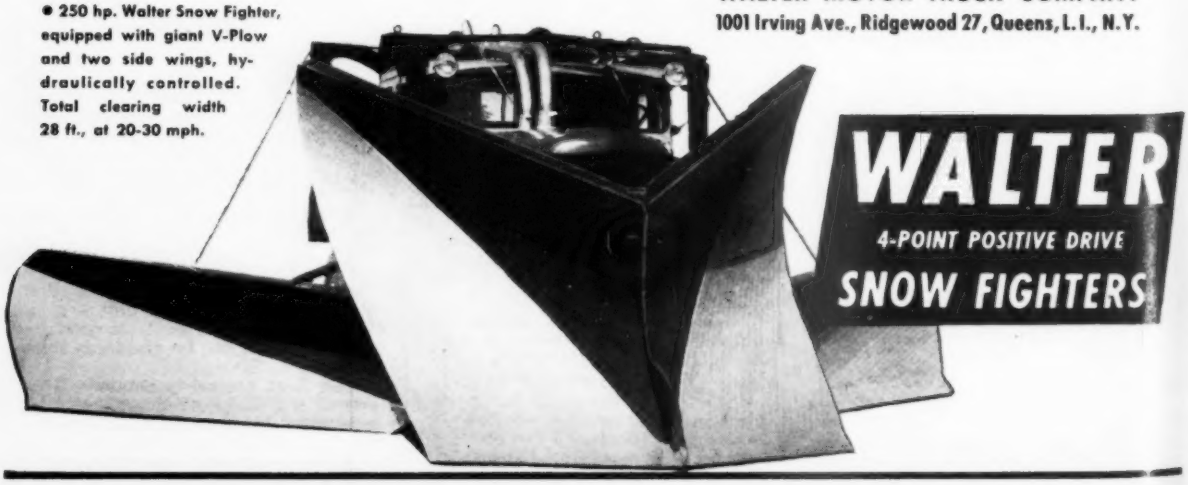
WHAT instruments have done to make winter flying safe, Walter Snow Fighters have done to make Winter landings and takeoffs safe. These big, fast, powerful, specially-designed snow removal units keep runways open thruout any storm.

Having the 100% traction of Four-Point Positive Drive, Walter Snow Fighters roar up and down your runways at 20-30 mph. Huge plows hurl snow far off the runways, side wings cut down and widen windrows. A 150 ft. width on a mile long runway can be cleared in 20 minutes in average storms—entire runway cleared in 1 to 1½ hours.

No other equipment approaches Walter Snow Fighters in fast, high-capacity, unfailing snow and ice control. Have our representative call with full facts—or write for literature.

WALTER MOTOR TRUCK COMPANY
1001 Irving Ave., Ridgewood 27, Queens, L. I., N. Y.

• 250 hp. Walter Snow Fighter, equipped with giant V-Plow and two side wings, hydraulically controlled. Total clearing width 28 ft., at 20-30 mph.



AIRPORTS
Including Features Formerly in AIRPORTS AND AIR CARRIERS Magazine

Burlington Builds Functional Terminal

A new administration building at the Burlington, Vt., Airport is scheduled for completion on Nov. 1 to replace the existing building, facilities of which have been outgrown by the increase in postwar traffic. The new building is shown as it will appear to one approaching from the highway.

Since there are no special or unusual structural problems involved, the major professional interest in the new building is centered on the space-use pattern evolved by the designers as a working example of current planning theory for this type structure.

This building is a particularly good example for study since it combines not only the facilities for normal domestic traffic, but also those for handling international passengers, mail and freight. Thus, although of comparatively small size, its functional elements are as many as those of a much larger installation.

The designers of the Burlington Airport administration building have based their design on the theory that the physical movement of flight traffic is the most important function of such a building and that all other facilities are adjuncts thereto and should not interfere in any way with the smooth flow of outgoing and incoming passengers, mail and freight.

Thus, all activity within these adjunct facilities should take place within subordinate areas apart from the main traffic flow. In so far as possible, these areas should be provided with their own means of entrance and exit, although with installations such as Burlington, it is often necessary to combine those of two or more facilities.

The plan of this building shows the long axis parallel with the taxiway, with the passenger entrance from the road and the loading exit to the field exactly opposite one another on the short axis. Hence, the most heavily used flow line in the building is as short and unobstructed as possible.

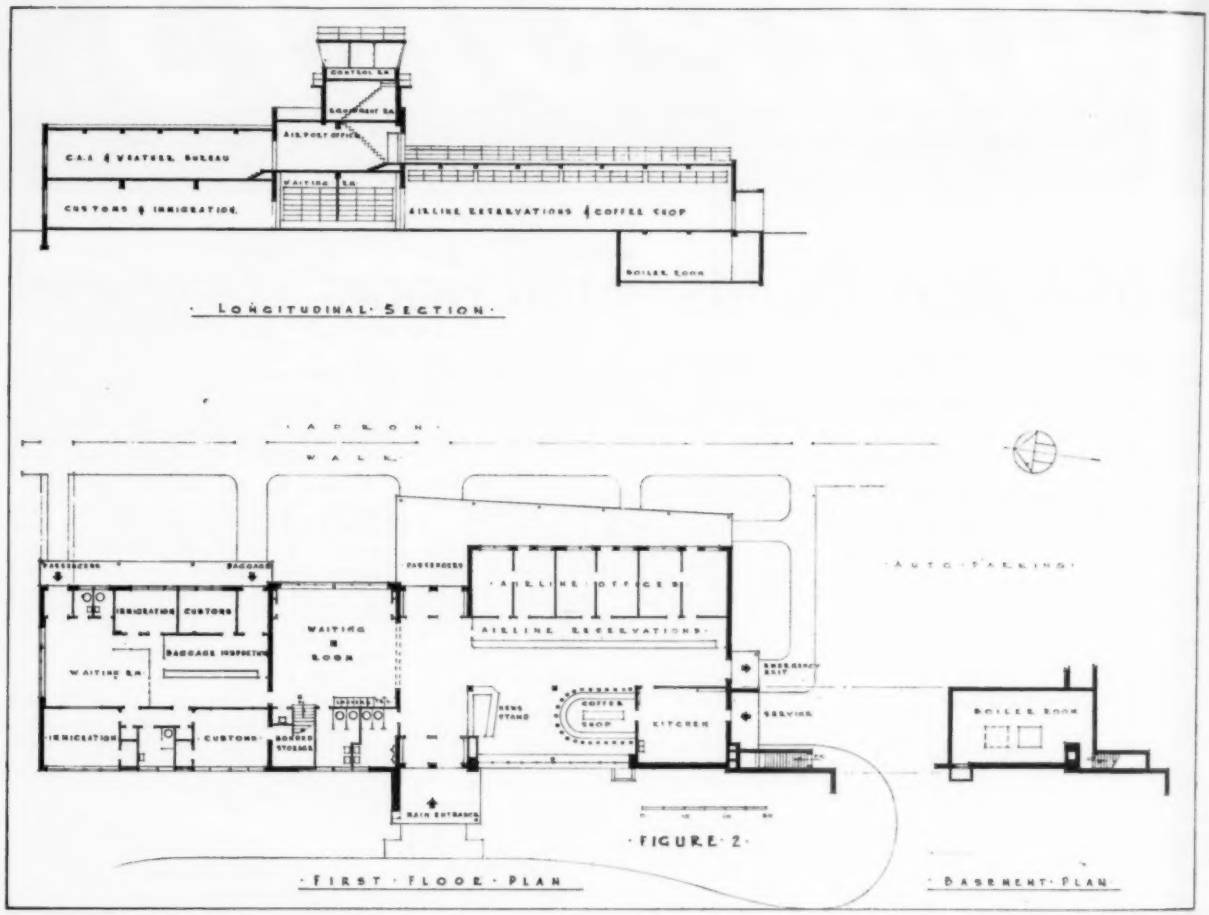
The waiting room has been purposely located with a view of the field so that friends and relatives of flight passengers might view the take-off and landing of planes and still be out of the way of the entrances and exit to the field.

Observation Deck. For the convenience of spectators as well as a means of revenue, an observation deck has been established on the roof directly over the first floor public corridor. It should be noted that at no time will spectators interfere with the passage of traffic to and from planes.

A lunch bar has been provided which, due to limitation of available funds, serves both passenger and spectator patrons. It is expected that when funds become available in the future, this lunch bar will be supplemented by a fully equipped restaurant over part of the present observation deck area. In this location, an excellent view of the field will be had.

To the left of the principal traffic lane on the first floor, the Customs and Immigration offices have been placed. Passengers and freight are passed directly from the incoming plane to the Customs and Immigration section without being involved with domestic passengers. After inspection, passengers pass through to the main section of the building where they can be served at the coffee shop or obtain information from the airlines. It is hoped that the separate waiting room provided for this

CONSTRUCTED with 50% CAA Federal Airport Program funds matched with local funds, this unusually attractive administration building at the Burlington Vermont Municipal Airport is scheduled for completion in November 1949. Designed by Harold C. Knight of Fay, Spofford and Thorndike, consulting engineers of Boston and New York, low bid was $225,976. Design and construction was under general supervision of CAA Region I Office of Airports. Building combines facilities for domestic and international traffic.



FIRST FLOOR plan shows passenger entrance from roadway directly opposite loading exit to field for shortest possible flow line through building.

section will be more attractively furnished than similar areas in some of our largest installations.

On the second floor above the customs and immigration section, the Weather's Bureau's offices have been placed. The Weather Bureau requires a northwest exposure as well as an unobstructed area for weather observations.

The Civil Aeronautics Administration offices occupy the remaining area of the second floor northwest wing, which affords them a view of the field and places them adjacent to the Weather Bureau so that information between each department can be passed without delay.

Manager's Office. At the head of the stairs on the second floor adjacent to the public corridor is the office of the airport manager. From this office there is an excellent view of the field, which is essential to proper administration.

The airport traffic control chief has an office on the field side of the building, second floor, which is comparable to that of the airport manager. Directly above, for ease of running communication cables, etc., the tower equipment room is placed, and directly above it is the control tower.

The placing of the boiler room was one of concern, as a chimney should not be located to obstruct the view from the control tower nor be in a position to influence flights of Weather Bureau balloons. Therefore, it was placed at the far corner of the building, directly under the kitchen.

The Airport Commission set up two requirements, namely, the building must be of fireproof construction, and local materials should be used wherever possible.

Native Materials. Exterior walls are face brick with load bearing hollow cinder concrete masonry back-up units. Exterior stone is Vermont granite. Interior partitions are four inch cinder black and columns are reinforced concrete and concrete-filled steel columns. Interior window sills are Vermont slate. Cement paint is used on walls and ceilings. Heating system is steam with enclosed radiation. The tower only is air conditioned.

The building is so designed as to provide for future plastering of walls; therefore, the cement base paint was used so as not to destroy the bond for future plaster.

The building was designed by the consulting engineering firm of Fay, Spofford and Thorndike of Boston and New York, under the direction of Harold C. Knight, architect. The CAA Region 1 Office of Airports had general supervision of this project since it was constructed with 50% CAA Federal Airport Program funds matched with local funds. The low bid was $225,976 by Wright & Morrissey, contractors of Burlington, Vt.

NYPA Airport Bond Issue

The finance committee of the Port of New York Authority has been authorized to request bids on $30,000,000 of air terminal bonds. Proceeds will be used to refund $10 million of temporary airport notes and for capital improvements during the next year at Newark, Teterboro, La Guardia and Idlewild airports.

The bonds will be dated October 1, 1949, and will fall due in 1979. Sinking funds will be established commencing in the tenth year to retire the entire issue by maturity.

CAA Fails to Encourage Single-Runway Airports

By KEITH SAUNDERS

WHY isn't the Civil Aeronautics Administration pushing the construction of single-runway airports?

That was the explosive question tossed into the CAA's Airports Advisory Committee meeting last month by two speakers, neither of whom had been appraised of the other's subject.

The speakers were A. B. McMullen, executive secretary of the National Association of State Aviation Officials, and J. B. Hartranft, Jr., general manager of the Aircraft Owners and Pilots Association.

McMullen

Gist of their complaint was that CAA, after actively developing satisfactory crosswind landing gears which would make feasible the construction of numbers of single-strip airports, has failed to encourage such construction and has, in some instances, actually discouraged it.

Both cited evidence that single-strip fields are practical, even without crosswind gear.

The proposition is as simple as A-B-C, in McMullen's opinion. You can take a given number of dollars from Federal, state and local sources and build a good many more airports with a single landing strip than with two or more runways. Possibly more important is the matter of accessibility.

More Sites. The number of potential sites available for close-in single-runway airports vastly exceeds those available for all-way fields. Such fields also would be more economically feasible in most cases, due to the reduced area required (20 to 40 acres for a single-strip field as against 75 to 150 acres for a two-runway airport). And one state director of aeronautics reports that in his state the small close-in airport is usually self-supporting, whereas the large inaccessible airports are frequently "white elephants."

As to the charge that single-strip fields would discriminate against owners of existing aircraft, most of which are not equipped with crosswind gear, McMullen points out that existing aircraft can continue to use all the fields they are now using and would be able to use the single strips about 85% of the time. Furthermore, a recent AOPA survey clearly indicates of those airports reporting 10% or over cancellation of operations due to crosswind, nearly all would have cancelled because of the strength of the wind, regardless of direction.

Also, McMullen pointed out, existing aircraft will account for only a small percentage of the total life use of airports now being constructed, as these fields will be in use long after all existing airplanes have been scrapped.

Actually, the NASAO director said, existing aircraft up to the size of the DC-3 can be modified to allow almost 100% usage of single-runway airports at a total cost which would be only a fraction of the potential savings in future airport construction costs. For example, DC-3's equipped with the Goodyear crosswind gear were recently certificated for airline operation with cross winds up to 40 mph, and all the DC-3's now in service could be so modified for about $3,000,000, or less than what might be saved on a single airport.

Wartime Experience. Then, of course, there is the well-known fact, McMullen declared, that most of the Air Force's operations overseas during the war were conducted from single-strip or single-runway bases, and with almost no mishaps resulting from crosswind conditions.

And what about the many single-strip fields now in use which were built and are operated by private individuals? Of some 6,200 known airports in the country, 1,685 or 27% are single-strip fields, and most of them are doing as well or better financially than many larger fields, and their operational problems are minor. Of 330 such operators questioned by AOPA, only six expressed dissatisfaction with the single strip and 300 said they wouldn't change if they had the opportunity. AOPA also asked pilot members who fly into such fields for their reaction, and 91% answered favorably.

"In view of the preponderant support of the policy of changing our airport planning *now*, in preference to deferring this change to some later date, many NASAO members are now recommending that the association as a body endorse the adoption by the Federal government of a policy strongly advocating the elimination of the expense of extra runways for wind coverage only," said McMullen, adding: "It is not beyond possibility that the association will soon go further and advocate withholding Federal assistance for such additional runways."

States Favor Action. He said he knew of only five state aviation directors who question the advisability of immediately standardizing on single-strip non-terminal airports, whereas at least 15 others are now directing their state-

With a GREER GENERATOR TESTER

The heart of the modern aircraft electrical system is the generator. And above all, this most vital electrical component must be kept dependable for safe aircraft operation. Dependability in flight is greatly enhanced by periodic ground checking on the Greer Generator Tester.

Built to handle generators rated up to 600 amperes at 30 Volts dc this tester will handle all generators used in present day aircraft. Power to drive the generator is supplied by an infinitely variable speed drive motor rated up to 35 hp and speeds up to 12000 rpm and is shock-mounted for smoothness. Generator temperature is accurately maintained within specified limits by a turbo-compressor blower and blast gate, while generator performance is readily indicated by accurate electrical instruments on a conveniently located instrument panel.

The slightest irregularity in generator performance or symptom of inpending failure are quickly detected on the Greer Tester.

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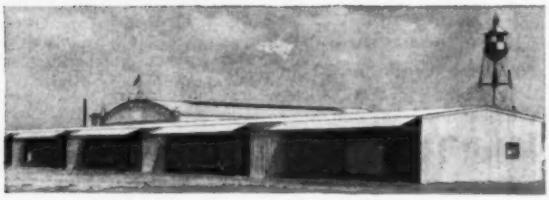

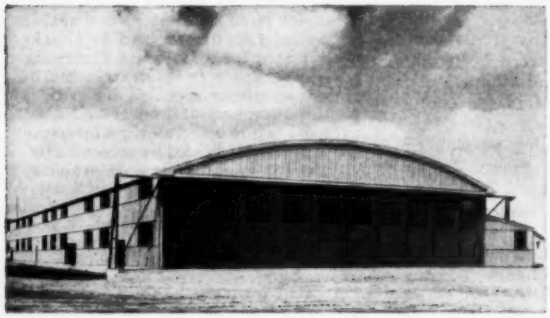

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wide airport planning toward this goal. Several, he said, have taken a firm stand against provision of more than one runway, some are recommending but not insisting on single runways, and some plan on only one improved runway with a short unimproved cross runway.

Hartranft of AOPA put the matter bluntly in two questions. Said he: "When a small community writes a letter to the CAA Airport Section and asks the question 'Do you recommend that we install a single-strip airport for our community?' what kind of an answer is forthcoming?" And "Of the millions of dollars of taxpayers' dollars spent under the Federal-aid airport program, how many dollars have been spent on single-strip airports?"

He made it clear that he believed CAA has made few grant offers to communities for single-strip airports and is, on the other hand, encouraging applicants to build at least two runways.

C. E. A. Brown, director of the Ohio State Aviation Board, put it a little differently, saying: "While CAA policy topside may be sold on single runways, we find it difficult to compete with the recommendations of the local CAA people . . . Until we find the regional CAA as insistent upon the development of close-in single-runway fields as are we in the state, it will be no easy task for the full potentials of the crosswind gear to be realized."

CAA Awaits Reports. Asked for a statement of its current policy on single-strip airports, CAA said such a statement will be made by Administrator D. W. Rentzel after he has had an opportunity to look over reports and breakdowns that have been requested from all the CAA regions.

The first such report to come in, from Region 1, showed that 21 single-strip fields have been constructed, are being constructed or are in the planning stage under the Federal-aid airport program in nine states in that region, most of these being in Massachusetts, Pennsylvania and New Hampshire.

A CAA spokesman said regional engineers have in many cases recommended that communities wanting to build single-strip airports should at the outset acquire enough land to permit addition of another runway at a later date, if traffic should require it, but that CAA was not discouraging communities that want to build and can afford to build only one landing strip.

McMullen and Hartranft are not convinced that CAA is as interested in the construction of single-strip airports as it was in development of the crosswind landing gear which makes such fields feasible.

They feel that CAA, having developed a crosswind landing gear that works, should encourage the construction of large numbers of single strip airports now, thereby encouraging aircraft manufacturers to make the gear standard equipment on all personal, executive and small transport types.

Airport Notes

Chicago's 7,000-acre international airport on the northwest side of the city (formerly Douglas) has been dedicated as **O'Hare Field** in honor of the late Lt. Comdr. Edward H. (Butch) O'Hare, World War II air hero.

Worcester, Mass., is all set to complete most of the major construction contemplated in its 10-year airport master plan. It has $1,200,000 available in city, state and federal funds with which to erect a $450,000 terminal building and make other improvements . . . **Shreveport, La.,** has taken title to the last tract of land needed to begin construction on its new airport.

Construction of an observation ramp at **Lambert-St. Louis Municipal Airport** is being discussed . . . The management at Lambert is having trouble with motorists who persist in ignoring the parking meters installed in front of the "ad" building last spring . . . Airport Transit Co. at Denver has been ordered to refrain from soliciting auto rental business at **Stapleton Field,** where Auto Rental Service, Inc., holds an exclusive contract for the right to rent cars.

Joseph J. Mulhern, Boston attorney, has been appointed chairman of the **Massachusetts Airport Management Board,** succeeding J. Reed Morse . . . A $105,000 suit against the commissioners of Luzerne and Lackawanna counties arising from condemnation of land for construction of the **Wilkes-Barre-Scranton** airport has been settled for $55,000 . . . The Metropolitan Airport Authority of **Rock Island County, Ia.,** is being sued for $27,000 by a farmer who claims construction work at the Moline airport has resulted in a flooding of his land.

The CAA has approved installation of high-intensity lighting and instrument landing systems at **Burlington (Vt.) Municipal** . . . Bids will be taken this month for a $200,000 "ad" building for **Harding Field,** at Baton Rouge . . . The north-south runway at **Hensley Field,** Grand Prairie, Tex., is to be extended from 5,200 feet to 7,500 feet, with the Navy paying for the work . . . **H. Angus Perry** is the new manager of the Cape Cod Airport and the adjoining Mystic Lake Seaplane Base.

Thomas Bourne and Associates, of Washington, D. C., will operate and maintain **Kimpo Airport,** Seoul, Korea, under a contract with the Civil Aeronautics Administration. They will provide technical personnel to operate the field, which serves international air carriers. The Economic Cooperation Administration last month approved a grant of $250,000 to cover costs of operation and maintenance of navigational facilities at the field for six months from Sept. 1.

Quincy (Ill.) Municipal was formally dedicated Sept. 11 and named in honor of **Maj. Thomas Scott Baldwin,** pioneer airman . . . The $240,000 Lea County Airport terminal building at **Hobbs, N.M.,** was dedicated on the same date.

Merle Huston, who developed All Valley Airport at Harlingen, Texas, from a war surplus field, has taken over the position of airport manager at Corpus Christi. He is a member of CAA's Airports Advisory Board.

CAA Airport Grant Offers

For the two-week period ended September 16, Federal-aid airport grants totaling $508,041 were made to 16 communities by the Civil Aeronautics Administration, as follows, with classes in parentheses:

Alabama: Gadsden Municipal (4), $8,200.
Colorado: Stapleton Field, Denver (6), $43,000.
Georgia: Atlanta Mun. (7), $24,508.
Indiana: Warsaw Mun. (2), $5,000.
Iowa: Waterloo Mun. (4), $56,000.
Louisiana: Selman Field, Monroe (4) $1,000.
Minnesota: Marshall Mun. (2), $2,500.
New Mexico: Lea County Airport, Hobbs (4), $60,708.
New York: Jamestown Mun. (2), $56,000.
Oregon: Albany (2), $17,000.
Pennsylvania: Sunbury, Penn Valley Airport (2), $36,625.
South Carolina: Charleston Mun. (6), $17,500.
Tennessee: Nashville Mun. (6), $72,000.
West Virginia: Wheeling-Ohio Co. Airport (4), $85,000.
Wisconsin: Ephraim (1), $7,000.
Wyoming: Rawls (2), $16,000.

These boosted the Federal-aid grants through September 6 to 939, and the Federal funds involved to $87,744,377.

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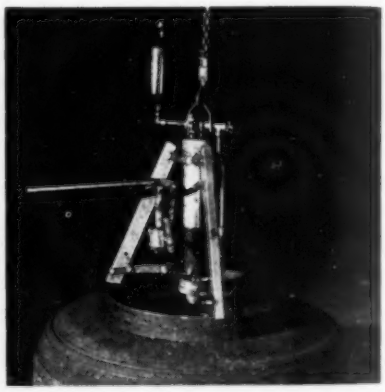
Stripe Remover

OBSOLETE MARKINGS around the airport have always been a problem. Markings applied for permanency have been almost impossible to remove when changes in ramp procedures require alterations. At Wold-Chamberlain Field (Minneapolis-St. Paul International Airport) this problem has been solved by use of the machine shown here. Manufactured by the G. H. Tennant Co., 2530 N. 2nd St., Minneapolis 11, Minn., the paint removing machine removed 43.5 linear feet of markings per hour compared to 3 ft. using paint remover and a steam jenny, the fastest previous method. Tennant's stripe remover is self-propelling and is equipped with a 16 in. drum-type cutting device that revolves at 1725 rpm. Heavy dust and debris are hurled into a built-in hopper while a vacuum system controls the dust.

Shown operating the machine in this photo is one of the airport maintenance men while L. S. Johnson, assistant airport director, looks on.

Bead Breaker



EVERY OPERATOR uses some device to break tire-beads away from the wheel rims after long tire service periods. Although there are a number of serviceable units for this purpose on the market, most operators, large and small, have at least one set of shop-made tools which they seem to favor. At Pan American's ultra-modern overhaul base in Miami the wheel shop is still using this handy tool designed by one of PAA's employes.

Using scrap material from around the shop, this quick-acting, hydraulically operated tire bead breaker was formed. The main element of the unit is the old landing gear retract struct which is used to bring pressure against the two rim plates above and below the tire. An old hydraulic hand pump is used to supply the pressure. A miniature reservoir for the fluid is used on top of the strut.

A tour of other shops in the area shows parallel applications of similar equipment. While this assembly is used in the vertical position operating from a chain hoist, others are being used in horizontal positions with minor changes in accessories. Its understood that a commercial version of this same unit is now being marketed.

Traffic Counter

FOR COUNTING ARRIVALS and departures of all classes of aircraft, this handy arrangement of counters was devised and built by K. R. (Ken) Galbraith, chief CAA control tower operator at Westchester County Airport, White Plains, N. Y. Six small counters, of the variety obtainable in most stationery stores, are mounted on a 6 in. by 9 in. by ¾ in. wood base with a pad of foam rubber nailed to the bottom. Each counter has an identifying name plate. Front row left to right are marked "Civil Local," "Civil Itinerant" and "Army Local." Back row left to right are "Air Carrier," "Navy Itinerant" and "Army Itinerant." Counters go up to 999 and then return to zero.

Built-In Lightplane Safety Aided by Cornell Research

By BURDETTE S. WRIGHT

Cornell University Medical College's recent report on crash injury research reveals that very little is known about the crash forces on the structure of planes. The college's Crash Injury Research Project considers further research as most important in order to advance the design of a crash-resistant aircraft.

It almost goes so far as to say that a plane should be designed primarily for crash resistance and secondly for price, speed, range and comfort. The report suggests that this factor, designed into the personal plane, would do much to promote broader acceptance of lightplanes.

That any injury from a crash "can be controlled to a large extent in the future by a better correlation of engineering and aerodynamic design" is reported as receiving a wider understanding among engineers. At least 14 modifications in design of light aircraft have been announced by manufacturers, but no one manufacturer is incorporating all at this time. (see box on this page).

Psychological factors studied in relation to crashes, though not the primary concern of the project, show that few pilots have experience or training enough to ride out a crash in the best manner. It would seem that there is an art to crashing a plane; that slow flight, confidence and some knowledge of how to approach a crash can save a pilot's life in almost any circumstance where the pilot has at least deadstick control of the plane.

Students and inexperienced pilots have unnecessary apprehensions over forced or precautionary landings that an experienced pilot would take in his stride. The project's studies have shown that safe landings can be made in trees, water and rough terrain if properly executed. For this reason it has been proposed that Cornell Committee for Air Safety Research make a motion picture to show that apprehension over emergency landings is unnecessary. Deadstick landings under all conditions would be shown with the proper way to approach such a landing on any terrain. Use of the shoulder harness would be shown, a device highly recommended by the project.

Results with Pilots. Pilot groups have not been receiving information on the findings of the project because, they say, they thought owners and pilots could do little to increase crash resistance of a light plane. During the past year, however, the CIR has been asked to publicize its findings before several groups. More or less experimentally, the findings were presented to three pilot groups in New York State. Results were "surprisingly favorable."

There was a good deal of interest in protection offered by slow-down speeds, pre-stall indicators, solo flight in the rear cockpit, the shoulder harness and other protection measures in which the project is interested. One of the groups was so impressed that it wrote to all lightplane manufacturers urging that shoulder harness or at least attachment points for it be included as standard equipment in lightplanes. Conclusion is that "honest discussion of crash problems and what could be done to increase safety in accidents made pilots less apprehensive rather than more so."

The CIR, going further in helping the lightplane industry design safety into the plane, is preparing a schematic presentation called "Twenty Features Governing Safety in Aircraft Accidents." The craft shown will not be a specific design, but will be fairly representative of all lightplanes. Shown will be how features of crash protection, both in the overall design and in detail, can be applied to a small plane.

Attesting to the validity of the work being done by Cornell is the fact that automobile manufacturers are using information supplied that will help in design of safety features in forthcoming models. At least two recommended modifications are being introduced for the protection of auto passengers. Also, CIR has assisted the University of California in setting up a similar study project for automobile crash injuries.

Modifications in Light Aircraft Designed to Increase Occupant Protection

(Reported to CIR by Manufacturers of Personal Aircraft)

(1) Occupants are seated farther aft than usual in six new ships, thereby getting increased protection from forward structures.
(2) Three planes have engine sections and supports designed to give the occupants greater protection by absorbing forces through progressive collapse.
(3) Four ships use no horizontal or vertical tubing around the pilot.
(4) Two ships have landing gear with extraordinary energy-absorbing characteristics. Three manufacturers state that their gear is extra rugged and designed to increase the protection of occupants in crashes.
(5) Two planes have unusually strong overall cockpit structure.
(6) Exceptionally strong turnover structure is reported in two planes.
(7) Instrument panels have been moved forward, away from the pilot in four planes which use control wheels.
(8) Five instrument panels are designed to lessen the danger of head injury.
(9) One new crop-duster has shoulder harness as standard equipment.
(10) Three planes have stronger seats and seat anchorages.
(11) Pivoted backrests on forward seats, to lessen chances of injuries caused by rigid structure, are used in six planes.
(12) One plane has the windscreen and side windows so designed that a heavy blow will knock them out of their mountings rather than shatter them.
(13) One plane has forward diagonal braces specially arranged to buckle outward under heavy crash loads.
(14) Control wheels designed with safety features are used in six personal aircraft.

CAA Hinders New Plane Types, Loening Charges

The Civil Aeronautics Administration's type certification procedures came in for a sharp criticism at the recent meeting of the Institute of the Aeronautical Sciences in Dayton.

Grover Loening, advisor to the National Advisory Committee for Aeronautics, told the meeting that "the manner in which the CAA certification complicates, delays and increases the cost of development of a new type of aircraft" is the "most important hindrance" to the development of aviation today.

"Where the hindrance to development comes in is that the gentlemen who write these rules and regulations are neither inventors, nor engineers, nor developers," said Loening. "They are merely expert observers who are writing down the specification for last year's aircraft because that is the only kind they know about.

"And the engineer who wants to develop next year's aircraft has to laboriously go through the process of having these rules altered so that his new

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idea will come under the rules—rules that didn't exist until his idea came along and rules which frequently are not allowed without interminable argument because of the natural reluctance of the official mind . . ."

Primary Training in 4-Place Planes Approved by CAB

The proposed special regulation for flight training in four-place and larger planes (AMERICAN AVIATION, July 1) has been passed by the CAB.

In lieu of primary flying school curriculum requirements of CAR 50.13 (a), the Administrator after Oct. 18 may issue an airman agency certificate with a primary flying school rating to an applicant who will, as a minimum, provide the following flight training: (a) 10 hrs. solo, (b) 15 hrs. dual, (c) 30 hrs. of flight instruction as an observer.

Defined as a Special Civil Air Regulation, it is not mandatory and will terminate Oct. 18, 1950 unless sooner rescinded. It has been established to evaluate a course of primary flight training in four-place or larger planes where two or more students would share time at the controls, and when not thus occupied, would study navigation, traffic control and weather conditions observed in flight.

According to CAB officials, it is thought that since most pilots learn to fly with transportation in mind, this type training would produce safer pilots.

Company Formed to Promote Powered Sailplane Soaring

Skysailing Corp. was incorporated last month in Delaware with authorized capital of $120,000. Intention of the company is to introduce a new concept of soaring with the use of power.

It has plans for a two-place lightplane with sailplane characteristic which would be powered by a small engine. The engine would be used only for takeoff and until the pilot had found the necessary thermals for soaring, and for landing. The plane would be built by a manufacturer under order.

Directors of the company, which has interim offices at 1624 Eye St., N. W. Washington, D. C., are Vice Adm. Charles E. Rosendahl, USN retired; Henry J. White, and Haven B. Page. White was active in aviation some years ago with Sikorsky and Lockheed. Page is an aviation attorney, founded Air Associates in 1927 and before the war was counsel for the Private Flyers Association.

Objectives of the company are to stimulate private flying as a competitive sport rather than as a means of travel; to provide rental for fixed base operators, and to reactivate the true airmanship of soaring as a national defense resource.

Fixed-Base Briefs

Two Safety Bulletins, **'File a Flight Plan'** and **'Buzzing . . . is Deadly,'** have been released by Bureau of Safety Investigation, CAB, Washington, D. C. Of particular interest is the fact that 518 buzzing accidents occurred in 1947, of which more than one-half resulted in fatalities, as described in the pamphlet on buzzing. These releases are available from Accident Analysis Division, Bureau of Safety Investigation, Civil Aeronautics Board, Washington, D. C., at 5c each.

The possible hazard of **poisoning from certain agricultural chemicals** as described in Aviation Safety Release No. 325, published by Civil Aeronautics Administration, Washington, D. C. The bulletin underlines the fact that stronger chemicals are appearing on the market and that definite precautions must be taken by the pilot for his own safety when applying them from the air. Copies may be obtained from CAA by mentioning the number of the bulletin. Copies have been mailed to all operators registered as aerial applicators or holding wavers to operate as such.

Grand Central Airport Co., has announced that **C. T. Reid** will handle public relations activities for GCAC and Cal-Aero Technical Institute in his capacity as assistant to the president. Reid replaces **Tom Engleman,** who resigned as director of public relations to enter business for himself in the publicity and promotion field.

New officers of the **Kansas Flight Operators Association** elected at the annual meeting recently in Topeka are: Ed Isaacs, Wichita, president; Jack Thomas, Wichita, vice president; and Hal Lightstone, Coffeyville, secretary-treasurer. Over 100 persons attended the convention dinner.

Slater Memorial Airport, Kansas City, Okla., has been taken over by **Aircraft Distributors,** who have placed **G. G. Jones,** long time associate, in charge . . . **Schilt Field,** Olney, Ill., will henceforth be known as **Ulrich Field.** Change became effective when Joe Chronister transferred management to **Mr. and Mrs. G. Dugan** . . . **Bowles-Agawam Airport,** Agawam, Mass., is now leased to **Miss Mary Gallagher, of** West Springfield, at an annual rental of $5 000 . . . **Gray Airport,** Dennison, Texas, abandoned when Texhoma Aviation, Inc., failed to renew its lease Aug. 1, is back in operation. **Frank and Henry Wilburn** having secured a long term lease on the field . . . **Ruidoso, N. M., Airport** has been purchased by **Lowell B. Morgan,** who will operate the Ruidoso Flying Service himself.

New operator at **Evansville, Ind., Municipal Airport** is **Cov Flying Service** . . . **Maryland Airport,** Pomonkey, Md., is now being operated by **Mr. and Mrs. Charles A. Bauserman.** Operation is now known as **Bauserman's Service, Inc.** . . . **Keller Airport, Jackson, Tenn.,** lease has been applied for by R. C. Harrison, White Pine, and J. C. Morrison, Morristown.

Bar O-Aircraft, Harrison, Wyo., plans to make regular trips to **Lusk, Wyo., airfield** to give flight instruction to Lusk residents.

Aviation Sales and Service

Better Cross-Wind Gear: Recent change in the cross-wind landing gear eliminates the problem of towing and shifting gear-equipped lightplanes about in the hangar, according to CAA's Lloyd Childs. Previously the gear had come out of the 'straight ahead' socket pretty easily with any change in direction; now it requires a pretty stiff kick to get it into the castering attitude. Childs said also that there are about 400 of the Goodyear installations in use and that when the price is lower there will be a real demand for it. Operators using it say there are fewer landing mishaps by students since it corrects for a skidding approach.

Smyer Nose Wheel: *Instructors at the Winchester, Va., Municipal Airport report their J-3 Cub equipped with the Smyer nose wheel gets considerable attention from visitors, who like the idea of flying something a little different and find landings in stiff winds routine. The unit has already paid for itself, they say, from increased use of the plane. Units are available from Smyer Aircraft Sales and Service, Downtown Park, Box 201, Oklahoma City, Okla.*

Boost for Primary Training: First use of the newly-approved primary flight curriculum using four-place planes (see p. 56 this issue) may be in Ohio. Several weeks ago AMERICAN AVIATION published a few remarks by Bob Sanders of Sanders Aviation, Inc., Riverdale, Md., who pointed out some of the reasons why it might get a slow start. A letter came to him from C. E. A. Brown, Ohio's director of aviation, explaining how it would be used, if approved. He proposes that a course of instruction be set up that would include "6000 miles of flight," the student to be charged by the mile, to some 40 airports in Ohio, including downtown strips in cities, airports in resort areas, and fields in every conceivable physical situation. Brown it also turns out, is largely responsible for CAB's consideration of the program.

McCauley Winners: *McCauley Corp., Dayton, O., made a comeback in this year's Goodyear race at Cleveland. Eight of ten finalists, including the winner, were using the new prop, programmed by Sid Gamsu. Last year they didn't do nearly so well.*

How to Lose Business: About a week ago a pilot (prospective customer) walked into an operations office in a southern state. There was a small radio tuned to a soap opera, and there were four intrepid airmen absorbed in the drama. The customer was fixed with what appeared to him to be a shy eye. Not a word was said, no one made a move to get up. Being a shy sort of person, not an intrepid airman, just a private pilot, the customer was edging for the door again when one of the *fixed base operators* sighed wearily and said "whatcha want, Bud?" By that time the prospective customer wanted nothing, and left them to their soap opera. Would this have happened in any other business selling service?

Ercoupe Price Cut: *A new price of $3,995 has been announced for the Ercoupe 'Club-Aire' by Sanders Aviation, Inc., Riverdale, Md. Previous cost was $4,090. The Ercoupe Standard Model is being discontinued, due to a lack of interest in the less luxuriously equipped plane. No change in equipment is planned for the Club-Aire.*

AOPA's 10th Anniversary: AOPA's 10th anniversary meeting at Rehobeth Beach, Del., September 17-18 brought 620 planes to Rehobeth Beach Airport, which happily reports pumping 3100 gals. of gas and cooking 700 chickens in the airport restaurant. Private pilots came from 16 states, longest flight being from New Orleans, La. Distributors of aircraft and accessories were on hand.

Lightplane Shipments: *While shipments of personal aircraft by 10 companies during first seven months were 50% below same period a year ago, sales of Piper Aircraft were down only 22% from 1,138 to 886. Total shipments of the companies reporting to the Personal Aircraft Council in January-July were 2,376 units, compared with 4,725 last year. Cessna is second largest shipper this year with 574 compared with 1,017 a year ago. In net billings Cessna was first with $3,124,000 this year, Piper second with $2,250,000.*

Fare Differentials, Equipment Interchange Favored by IATA

The establishment of fare differentials, and determination of a means whereby the world's airlines can interchange equipment are favored by the International Air Transport Association, but both problems are a long way from being settled.

Although the 5th annual general meeting of IATA last month at The Hague, Netherlands, adopted resolutions on both subjects, they are as yet only in the "discussion" and "consideration" stage.

Probably more important and newsworthy were several items buried in the reports of the traffic committee and the traffic conferences—unglamorous items but ones that are necessary in the everyday, routine operations of the international airlines. They included such things as commodity rate boards, methods of confirming reservations, interline baggage checking, and a number of others.

As far as tourist fares are concerned, an IATA committee had concluded that a majority of the operators could not institute them "without losing considerable sums of money. Additional revenue to be obtained from operating present standard aircraft with extra seats and from suppressing some of the amenities to which the air passenger is accustomed, was shown not to be sufficient to justify a reduction in the fare of the amount considered necessary to attract a new class of business. For the time being, therefore, this problem remains a problem."

Fare Problem. On fare differentials, however, the resolution adopted at the annual meeting said it was becoming increasingly apparent that substantial differences in service standards result from such factors as types of aircraft, ways of using a particular type of aircraft, character of traffic and whether regional or trunk-line operation is involved.

Establishment of a single standard of fares without regard to such factors may result in "injustices" as between IATA members, it stated, requesting the IATA executive committee to recommend to the traffic conferences "that they give immediate consideration" to establishment of fare differentials.

Interchange of planes between airlines of different states "would appreciably enhance the economic utilization of commercial aircraft," but now meets with difficulties mainly of legal and administrative character, another resolution said.

It directed IATA's standing committee "to consider any means" to promote free interchange without transfer of ownership. Possible solutions, it added, might be (1) establishment of an international aircraft register with the purpose that aircraft thus registered may freely be used by airlines of the contracting states, (2) elimination of any legislation of contracting states which prevents planes not owned by nationals of a state from being registered in the registers of such state.

"It may thus eventually become possible, for example, for an American airline to lend a transport airplane to an Indian company during the period when traffic is low in America and high in India, freely, without hindrance and without any compromise of the basic ownership of the aircraft," said Sir William P. Hildred, IATA director general, and Dr. Albert Plesman, IATA president. "An arrangement such as this will relieve the American company of a liability—for planes are a dead loss when they are not flying—and will permit the Indian company to increase its fleet at a critical moment without overstraining its capital structure."

IATA was also disturbed because traffic conference fare resolutions have seldom been effective for more than six months, necessitating frequent meetings and causing fare instability. It urged the conferences to make them effective for 12 months.

Commodity Rates. Possibly the most important item in the report of the traffic conferences referred to commodity rate boards. It was revealed that the conference meeting in Nice, France, last May set up three such boards. They have now been established, covering Europe, the Atlantic and Pacific Oceans.

The Nice conference "delegated its authority in rate-fixing to the boards, which are to represent the industry as a whole, and will have the power, without the delay attendant on conference meetings, to agree on special rates for named commodities," the report said. "This is an experiment that will be watched with the greatest interest by all member airlines and which, if successful, may in the future be extended to other forms of rate-making."

Other important subjects in the reports included:

1. **Interline baggage checking**—The IATA interline traffic agreement does not provide for interline baggage checking. The traffic committee (the policy guidance body) believes it should be done as a convenience to passengers and to save time at transfer stations. Accordingly, it has drafted an agreement which is being submitted to the traffic conferences for approval.

2. **Reservations**—There has been no standard procedure throughout the world for requesting, confirming and canceling interline reservations. Both the "chain" and the "scatter-shot" systems of routing requests have been used. Under the chain system, the first line passes the request for all subsequent portions of the passenger's routing to the second carrier, which completes the reservations over its own lines, then passes the request on to the third line, etc.

Under the scatter-shot system, the first carrier communicates direct with all participating lines. Some members had objected to the chain system, so the traffic committee has now drafted a resolution (for action by the conferences) providing that the scatter-shot system shall be the basic method of obtaining reservations. It will, however, not be unnecessarily rigid, and alternative procedures may be used in some cases.

3. **Advance reservations**—Some airlines have been unwilling to confirm reservations as far in advance as requested, placing other members at a disadvantage when competing against airlines operating through services and willing to make advance reservations. It has also resulted in diversion of business to surface carriers. The traffic committee has drafted a resolution providing that reservations will be confirmed as far in advance as requested.

4. **Time allowed for connections**—Reservations personnel, when planning itineraries, have been allowing intervals for making connections which are considerably in excess of intervals actually required. Each company has been fixing its own time allowances. The traffic committee has outlined a procedure which provides that members serving a town shall agree on standard connection time allowances for that town.

5. **IATA standard ticket**—The IATA ticket and that of the Air Traffic Conference of America differ in several respects, and a meeting has been arranged to reconcile the differences.

6. **Air Cargo**—Development of containers and light-weight packing materials is important, and the traffic committee is studying the questions and has established contact with manufacturers of packing materials.

7. **Exchange orders**—These have dif-

Fixed-Base Airline Agents

Chicago and Southern Air Lines reports that in July—the first full month of operation in Pine Bluff—its fixed-base operator agent handled 164 passengers with revenues totaling $2,812.

Five local operators used as agents by Mid-Continent Airlines in Iowa sold approximately $3,000 worth of airline tickets for MCA in the six-week period ended August 31. Hugh Coburn, v.p.-traffic and sales for MCA, pointed out that the important thing to his company was that "these operator-agents are tapping an entirely new market—business which the airlines otherwise would never receive."

The agents receive 5% commissions.

fered as between airlines, and the committee has taken action to obtain standardization of the form.

8. **Tracing**—Also lacking standardization has been interline tracing of missing cargo, baggage and mail, and the committee has recommended standardization both of the information to be given in tracers and the procedure for routing them.

Simplified Travel Rules Adopted by ICAO

Many of the formalities involved in crossing borders by air will be eliminated starting March 1, 1950, when member nations of the International Civil Aviation Organization place simplified rules into effect.

The rules, known as Annex 9 of the Chicago Convention, are considered one of ICAO's most important accomplishments, and have been in preparation for over three years. ICAO has been informed by a majority of its members that they do not disapprove the annex, and it therefore becomes effective March 1. Members have until December 1 to inform ICAO whether they will make any deviations from the annex.

The rules reduce entrance and exit requirements and standardize the number and content of forms required at a point of entry airports. They include a group of standard forms—passenger, crew and cargo manifests, embarkation-disembarkation cards, baggage declarations, etc.—plus limitations on the number of these forms which any state may demand of aircraft and passengers. In-transit visa requirements for passengers arriving and departing on the same through flight will be eliminated, as will the need for producing passenger and cargo manifests for customs and immigration officials during such flights.

Nations shall not require such forms as certificates of good conduct and good health for purposes of entry. Disinsectization and other public health procedures shall, as much as possible, be carried out during flight to eliminate ground delay.

The embarkation-disembarkation card, filled out by a passenger during flight, will eliminate the many forms now used to obtain immigration control data from temporary visitors after arrival and before departure, and will also eliminate the necessity for travelers having to obtain temporary entry permits.

Through Waybill Agreement

Slick Airways and Pan American World Airways have signed an air cargo agreement making possible shipments on a through airway bill between 52 U. S. cities and countries on six continents served by PAA. The agreement will eliminate much duplicated paper work now necessary and will permit the publication of through cargo rates by both companies.

Over the Counter

By Eric Bramley

Sales Promotion

BRANIFF AIRWAYS has given its twice-weekly DC-6 flight to Rio de Janeiro a name—El Conquistador del Cielo. This gives Braniff a "name" flight to promote, similar to the Pan American-Panagra El Interamericano New York-Buenos Aires DC-6, which operates over part of the same route. To launch the name, Braniff sent Miss Consuelo Baca, said to be a direct descendant of the first Spanish explorer of the southwest U. S., on a "greetings" trip to six Latin American countries . . . Interesting and novel promotional folder is being distributed by **Railway Express Agency**, entitled "A Picture Gallery of Air Express Users" . . . **United Air Lines** last month ran full-page ads in leading newspapers saluting the RTCA SC-31 system of all-weather navigation and traffic control. Purpose was to tell the traveling public what the program means to them in the way of increased dependability of airline operations. United plans to stress dependability this winter.

First Officer **Bill Bettwy** of **American Airlines** deserves a pat on the back for promoting his company. During each trip he gets a pad of in-flight blanks. "I have made a habit of methodically writing to one of seven favorite relatives on each day of each week, using the back of an in-flight blank," he says. "The in-flight report itself is filled out just like our reports to passengers. The letter part on the back always carries some story of flying that inspires the landlubber to try—just once." Relatives have showed the letters to friends, and Bettwy estimates that he now has 35 readers a week. And it's started to pay off—in passengers. "What would the cash register say if each of our crew members—1,000 strong—did this?" he asks.

All American Airways has started an incentive plan providing for equal payment to all station managers, station agents and reservations personnel throughout the system of a stated cash prize every month for exceeding a quota figure calculated on the number of revenue passengers loaded at the stations. For each 10% over quota, an additional sum will be awarded each employe at the station achieving the goal.

British Overseas Airways Corp. has issued an enticing booklet entitled "See how easily you can fly round the world." You are offered a choice of any route around the world from over 1,000 selections at standard fare of $1,700 (somewhat more via Australia) . . . **Scandinavian Airlines System** is distributing a booklet "Why Do I Fly With SAS"?

Aircoach & Family Plan

FOLLOWING are the new air coach flights going into effect: **Eastern Air Lines** and **Capital Airlines** starting New York-New Orleans Sept. 25, with EAL extending beyond New Orleans to Houston on Oct. 5; **Western Air Lines** starting San Diego-Seattle Oct. 15, and **EAL** and **National** inaugurating New York-Miami Nov. 1, which is the expiration date of summer excursion fares. All other coach flights that have been in operation have been extended except **Continental's** Denver-Kansas City DC-3 operation, on which there had not been a decision at press-time . . . Starting the family plan on Sept. 18 were **Delta, National, EAL** and **Chicago & Southern**, with **Trans-Canada, All American** and **Southern Airways** beginning Sept. 25. All companies in the industry except **Colonial** and **Wisconsin Central** now have the family plan.

New Services & Traffic

PAN AMERICAN AIRWAYS on Oct. 17 starts twice-weekly Stratocruiser service from San Francisco to Tokyo via Honolulu and Midway . . . **United Air Lines** on Sept. 25 started five-days-a-week all-cargo service between Los Angeles and Seattle-Tacoma via Bakersfield, Fresno, San Francisco, Oakland and Portland . . . **Southern Airways** has opened its Columbus-Charleston route and now has its entire system in operation, less than 100 days after certification . . . **All American Airways** started twice-daily service to Chess Lamberton Airport, serving Franklin-Oil City, Pa., on Sept. 25, and inaugurates Jamestown, N. Y., on Oct. 3. Both are on the Pittsburgh-Buffalo route . . . TWA and Eastern Air Lines have signed a lease for 3,000 sq. ft. of space in the Airlines Terminal Bldg., New York, for a sum aggregating $1,600,000 over a 20-year period. The space, which fronts on 42nd St. and on Park Ave., will be used jointly by both companies for ticket offices and display purposes.

Continental Air Lines completed 100% of its flights scheduled in August, 87.2% of them on time.

Classified Advertising

The rates for advertising in this section are as follows: "Help Wanted," "Positions Wanted," "Aircraft Wanted or For Sale," and all other classifications $1.00 a line, minimum charge $4.00. Estimate bold face heads 30 letters and spaces per line; light body face 40 per line; box numbers add two lines. Terms, cash with order. Forms close 20 days preceding publication date. Rates for display advertisements upon request. Address all correspondence to Classified Advertising Department, AMERICAN AVIATION PUBLICATIONS, 1025 Vermont Avenue, NW., Washington 5, D. C.

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ATA Researcher Predicts Traffic Record for 1949

Dr. Lewis Sørrell, director of research for the Air Transport Association, has made the prediction that the scheduled domestic trunk airlines will fly a total of 6,500,000,000 passenger miles this year, or nearly 500,000,000 more than in the record year of 1947.

He said it appears likely that air mail ton miles for the trunklines in 1949 will be approximately 42,000,000, or 13% above 1948; air express ton miles will total 26.5 million, about 15% under 1948, and air freight ton miles will reach 96,000,000, about 33% above last year.

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Airline Statistics: Copies of "Annual Airline Statistics, U. S. Certified Air Carriers, Calendar Year 1947," are now available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at $1.00 a copy.

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WINGS OF YESTERDAY

10 Years Ago

(In AMERICAN AVIATION)

Airlines were rushing to order transports before manufacturers became loaded with military orders as a result of war threats.

•

Development of instrument landing systems was delayed by an unexpected Presidential request for study of a standard system which would be used by both military and civil aircraft.

•

Following the outbreak of war in Europe, Pan American Airways shifted its trans-Atlantic terminals from belligerent countries, substituting Foynes, Ireland, for Southampton, England and Lisbon, Portugal, for Marseilles, France.

LETTERS

Invitation

To the Editor:

As an airport manager and president of the Southeastern Airport Managers Association, I should like to congratulate you on your publication, *American Aviation*. With the combination of *Airports* you now have, in my opinion the most informative publication for the industry at large. I personally have recommended your magazine to other officials because you treat problems of every phase of aviation. Your editorials display sound thinking, even though quite often I may not agree with them in their entirety. However, constructive criticism and thinking will bridge the chaotic river we are now crossing.

At some early date I should like for you to visit the south and see what we are doing for aviation and also see the result of our communities planning for better transportation.

J. HAMPTON MANNING
Airport Manager, Rush Field
Augusta, Ga.

(Editor's Note: Invitation accepted for an early date.)

Airport Clip Joints

To the Editor:

May I recommend a medal for you for your editorial in the September 1 issue, and the article on tipping in the September 15 issue of *American Aviation*. Keep it up and send a copy to every airport manager who runs the nation's clip joints. The airports are getting worse than the night clubs for clipping the people.

Have you ever had a hamburger at Marshall Fields' restaurant at the Chicago airport? Sixty cents for a plain hamburger, and he would expect me to ever go in his clothing store again? What a laugh! I won't ever eat in his restaurant again unless I'm starving.

The porters at the airport sit there until same little lady has carried her big bag across the street from the parking lot where she just got clipped. As soon as she gets the bag up to the door they jump up, and carry the bag to the counter, for which they expect the usual mortgage. She has really gotten service up to this point, hasn't she?

It makes the people shudder to think they have to go through this again at the destination, and again at the hotel. For this very reason there are a couple hotels where I won't stay if I can get in some place else. If the hotel management thinks I am going to tip a puny bell hop for carrying my bag 10 feet after I carry it 500 yards, (I've counted them) then they don't want my dollars.

I thought I traveled well prepared, but until visiting Covington Airport in Cincinnati there's one thing I hadn't carried. I walked into the restroom and it was spotless. I says to myself, "Ah, this is it." I pulled out my shaving kit, and the boy rushed up with a towel. I says, "Thanks, I have one." There was only one thing missing. A stopper!! He reached in his pocket and gave me one. He almost got back handed for that, but after I got through shaving he had the sink spotless before I got my shirt on, so I gave him a dime. Can't the airlines afford to pay him enough to keep the place clean? They could fire a dispatcher, and give him the dispatchers salary, and I would say it would be a good trade.

I don't know what there is about the people who run the airports, and the concessions that think the average person who goes out to see the new flying machines is going out to buy the million dollar Constellation, but many of them do.

There's one thing that worries me, Mr. Parrish. Do you think that boy in Cincinnati thinks I am a cheap skate because I only gave him a dime for using the stopper? He shouldn't, because I bought one for a nickel.

ELMER EBERHARDT
TWA First Officer
Los Angeles, Calif.

Glider Reserve and AF

To the Editor:

Enjoyed your article "Air Reserve Confusion" very much and agreed with you down to the last period. Let's hope they get on the ball.

Your article prompts me to write direct to you as you may know or know someone for an answer to my question. In the war I was in the Glider Corps as a pilot with the rank of flight officer and would like to know is the Air Force doing any glider work at present and do the Reserves have or plan to have any glider activities in their setup? I have inquired numerous times but to no avail. It also seems with all the red tape they throw at a former flight officer they don't seem to care if he joins the reserve or not but maybe that is caused by the general confusion stated in your article.

Read your column every issue as well as the rest of the magazine; keep up the good work.

PAUL B. HIGGINS
Salinas, Calif.

(Editor's Note: For the benefit of other glider pilots and flight officers who might have similar queries, the Department of Defense informs us that, as now constituted, the Air Reserve program does not include any glider training, nor are any glider units planned.

However, F/O Higgins is not automatically excluded from the Reserve program. He may apply for Reserve training and may also be appointed a second lieutenant in the Reserve and receive training with an organized Reserve unit. To join the Reserve, F/O Higgins should write to the Commanding General, Fourth Air Force, Hamilton AFB, Calif., the numbered Air Force which controls his Reserve area.

The Fourth Air Force will review his qualifications and PROBABLY (to quote the Defense spokesman) be appointed a second lieutenant, since the grade of Flight Officer has been discontinued. Such appointment may entail taking a certain amount of extension course work.

Since there are no glider units, F/O Higgins becomes eligible for one of several other assignments: administrative, operations, etc. The fact that he is a qualified airman may result in an opportunity to take training as an officer crew member (pilot, navigator, flight engineer, etc.), although the adminis-

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trators of the Reserve program are not quite definite on this point. (The Defense spokesman called it a "possibility").

Wants 'Positive' Approach

To the Editor:

I would like to submit several comments on your September 15 editorial entitled "Single-Engine Caution." I am really surprised at the negative approach you have taken to an action of the CAB which, when made effective, will result in considerable expansion of the services presently rendered by the scheduled airlines you address in this editorial.

Rather than advising airlines to "caution" their passengers that they were transferring from a super-deluxe multi-engine plane to a small single engine personal aircraft, I think the approach should have been to point out to the airlines how they could broadcast this new service as a forward step in the development of commercial air transportation.

Now, for the first time, airlines can offer point to point transportation by air. It is not difficult for the average person to understand that the 4-engined transport in which he might fly from New York to Chicago, for example, is far too big a piece of equipment to be landed at the small airport in a town seventy-five or a hundred miles out of Chicago. Up to now that passenger has had to desert air transportation and revert to slow ground movement. Now that airlines are able to assure him of completing his trip from Chicago to "x" community by air, it would seem they could express pride in that accomplishment and certainly not be apologetic as your editorial would indicate.

Passengers arriving at a railroad terminal do not expect to complete their journey in a parlor car. The railroad considers it an asset that smaller vehicles—taxi cabs—are available for immediate transfer of passengers from their plush parlor car to home, office or hotel. In exactly the same light the Board has now made it possible for airlines to assure their passengers of completing their trip by air.

The Civil Aeronautics Board made a far-reaching decision when they opened the door to the use of single engine aircraft for scheduled transport operations. Nor was this decision reached quickly but only after long and careful consideration. What we need to do now is to create a regulatory atmosphere calculated to encourage rapid growth of many local service airlines.

There is nothing in the least bit "puddle-jumpish" about our current single-engine executive type aircraft, as one would think from your editorial. In fact a great many business men are finding they can use such aircraft to great advantage because they can travel on their own schedules in comfort—no dirty, smoky old railroad trains, or gasoline-fumey buses—to places where the airlines can't take them.

All the Board did was to open up the possibility for every community in the United States now having an airport to enjoy scheduled air service and be connected by air with every other such place, both in the United States and abroad. What trunk airlines should in fact say, when transferring passengers to a single engine airline is something like this: "We have certainly come a long way, Mr. Air Traveller, for instead of transferring you to a train or bus we can now arrange for you to complete your journey rapidly by air."

I am sure that *American Aviation* desires to do all it can to encourage the increasing growth of our air transport system. Your editorial pages, your news columns, and your technical articles all reflect this. Let us give these small local service airlines, and their single engine equipment, all the help we can. They will build business for the trunk airlines and bring knowledge of the benefits of the air age to the "grass roots."

I think you really missed the point of CAB's order. They have not lowered their sights safety-wise. They have just opened up an entirely new area for airline development. The existing airlines should herald this and do all they can to encourage its rapid development. It opens up virgin territories to feed them trunk line passengers and it broadens the markets in which they can compete, which is really what everyone wants.

JOSEPH T. GEUTING, JR.
Manager, Personal Aircraft Council, AIA

(Editor's Note: Mr. Geuting is straining himself to make an argument. This magazine favors everything possible to help the small operator and to help the single-engine airplane. This magazine has lauded the CAB for its action in opening a new field of commercial activity for single-engined airplanes. But under no stretch of the imagination is the single-engined airplane "accepted" by the public at large and there's no use kidding anybody about it. We believe in the single-engined airplane and its reliability, but we believe most definitely that airline passengers should be advised of the standard of equipment when transfers are made. Aviation has over-sold itself too often in the past; let's move into this stage carefully and reap the benefits. It is quite a transition for the average lay public from a DC-4 or a Convair to a light airplane, unless the passenger understands in advance that he isn't transferring to a Martin 202 or a Constellation. Let's take this new development wisely and it will pay off.)

BOOKS

GLOBAL MISSION by General of the Air Force H. H. Arnold. Published by Harper and Brothers, New York. 626 pages, illustrated. Price, $5.
See page 28 for review.

THE AIRPLANE AND ITS ENGINE. Fifth Edition, by Charles H. Chatfield, C. Fayette Taylor and Shatswell Ober. Published by McGraw-Hill Book Co., Inc., New York. 373 pages, illustrated. Price, $4.50.

This is the latest edition of "The Airplane and its Engine," revised to include the latest developments in the fields of gas turbines, jet engines and rocket power plants. The book is ideal for the non-technical aviation enthusiast, for it provides a grounding in the fundamentals of aerodynamics and power plants without the confusing engineering detail which usually accompanies a book of this type.

In addition to generalizing on the basic principles of the various types of planes and engines, the book provides, as examples, detailed data on several specific types.

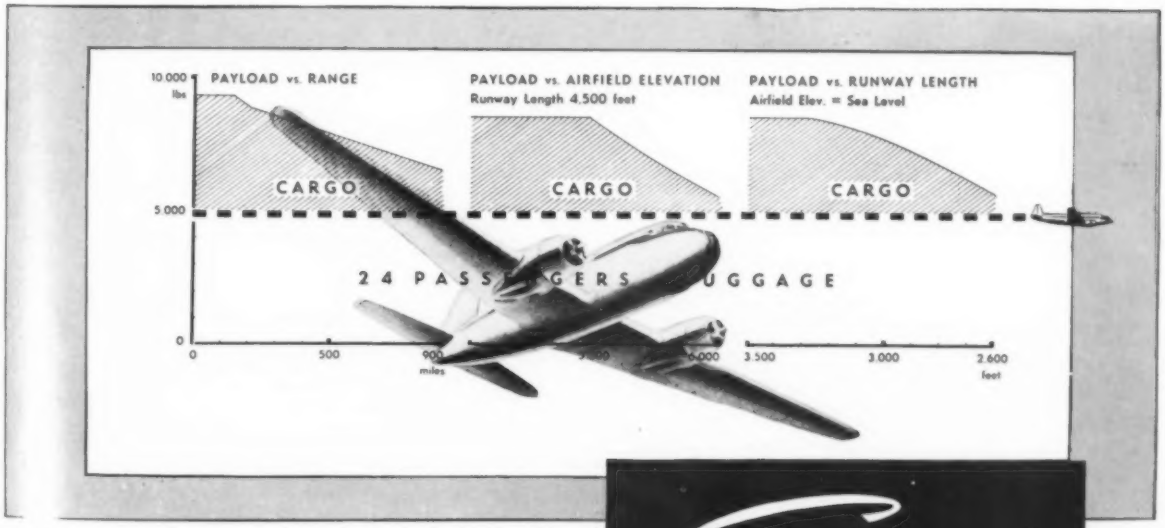
The authors are well qualified to handle their assignment. Chatfield is a Fellow of the Institute of the Aeronautical Sciences. Taylor is a professor of automotive engineering at Massachusetts Institute of Technology as well as an I. A. S. Fellow; and Ober, also an I. A. S. Fellow, is a professor of aeronautical engineering at M. I. T.

Planning Chart: The Coast and Geodetic Survey has published a new, improved edition of the Aeronautical Planning Chart of the United States, designed primarily for use in planning aeronautical routes between distant points. The new chart, designated as AP-9, cancels chart 3060b, which will continue to be distributed as a miscellaneous map without the aeronautical overprint. Chart AP-9 is distributed at 40c per copy by the authorized agents, district offices, distribution centers, and the Washington office of the Coast and Geodetic Survey.

THE UNSEEN PASSENGER OFFERS HIS SEAT

"The unseen passenger" is a common occurrence on most transport planes. With due consideration to the take-off weight it is not always possible to carry the full complement of passengers, although empty seats are available in the plane.

"The unseen passenger" does not, however, appear on the Scandia. Under practically all conditions this plane can take the full number of passengers with luggage — in addition to a paying freight.



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has a new location at Stapleton Airfield, Denver

LOU CLINTON, President, Clinton Aviation Co., says: "Our new location and enlarged facilities on Stapleton Airfield enable us to give faster, more efficient service in more convenient surroundings. We've handled Texaco Aviation Products exclusively for more than 10 years because their uniformly high quality has been a potent factor in creating satisfied customers and building a successful business."

Same superior service in a more convenient spot . . . same top quality Texaco Aviation Lubricants and Fuels

In its new hangar location on Stapleton Airfield, Denver, Clinton Aviation Co. becomes a real aircraft service center. Private planes and executive aircraft now get topnotch line and shop service close to the weather bureau, cafe, C.A.A. offices, cab and bus facilities. Texaco Aviation Lubricants and Fuels are sold exclusively as they have been for more than 10 years.

Successful airport operators everywhere draw business by combining quality service with quality products. Texaco products are known and trusted in all 48 States. To fliers, best evidence of their outstanding quality is the fact that –

More revenue airline miles in the U. S. are flown with Texaco Aircraft Engine Oil than with any other brand.

Let a Texaco representative give you complete details. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States or write The Texas Company, *Aviation Division,* 135 East 42nd Street, New York 17, N. Y.

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